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Eleven research projects dealt in some way with an aspect of education for the academically talented student. Among those discussed and evaluated are: the social relations of gifted elementary school children in regular and ability-grouped classes; the frequency of academic underachievement among pupils who display *high scholastic* aptitude; a study of the degree of consistency and factors related to consistency in the group intelligence test scores of gifted children; a follow-up study of high ability-high achieving Ohio secondary school graduates; a study of the effectiveness of the English 2600 course in one high school; an analysis of creative thinking tasks as measures of academic potential; an attitude-information inventory administered to elementary teachers at the beginning and end of a project for the gifted.

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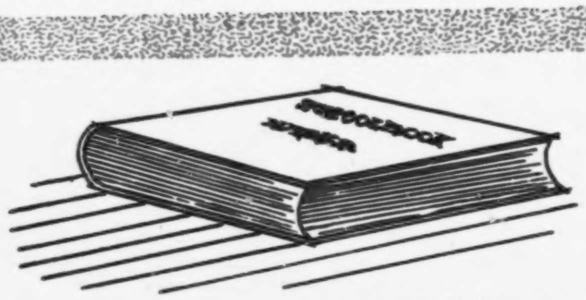

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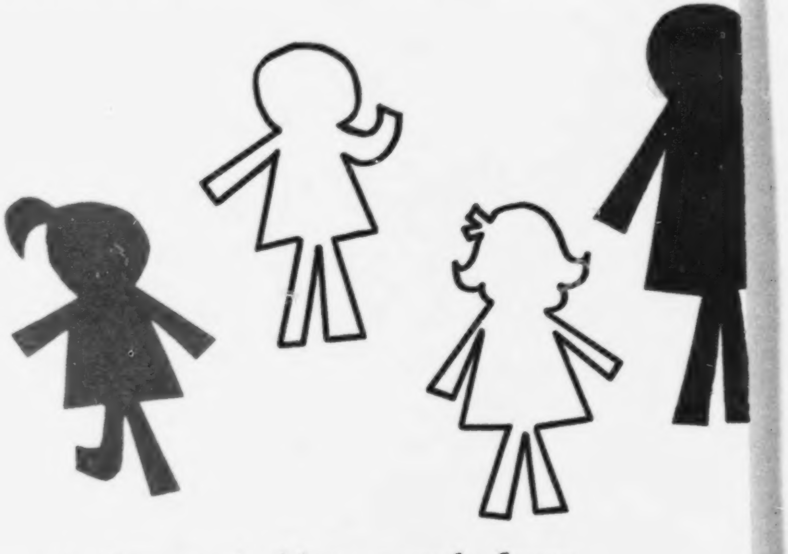

A Research Monograph from Ohio's Program for the Gifted Child

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PATHWAYS TO PROGRESS

A RESEARCH MONOGRAPH FROM OHIO'S PROGRAMS FOR THE GIFTED CHILD

THOMAS M. STEPHENS
Administrative Assistant
Division of Special Education

ARTHUR R. GIBSON
Educational Specialist
Programs for the Gifted

(EDITORS)

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FOREWORD

Ohio has conducted a number of demonstration projects and research studies in its programs for the gifted child. From time to time, school systems report to us the results of their own research studies.

This monograph contains research studies sponsored by the Ohio Department of Education and carried out by university and public school personnel, as well as studies that have been conducted by local school systems as a part of their educational program.

Research studies are an important segment of any educational program. Their importance lies not only in the immediate results that may be found, but also in the guidelines that are produced for the future direction and improvement of the total educational program.

It is my hope that these studies will be useful not only to the participants, but to all school systems in Ohio.

E. E. HOLT,
Superintendent of Public Instruction

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AN ATTITUDE – INFORMATION INVENTORY ADMINISTERED TO ELEMENTARY TEACHERS IN PORTAGE COUNTY (OHIO) AT THE BEGINNING (SEPTEMBER 1960) AND END (JUNE, 1962) OF A SPECIAL PROJECT ON THE GIFTED

Walter B. Barbe
Kent State University

The Portage County Project for Gifted Children was a joint project of the County and Kent State University. It was established through funds from the Ohio Department of Education, Division of Special Education, for research and demonstration projects in the area of the academically gifted. The two year project had as its main goal an attempt to determine what could be done for gifted elementary school children in a county system. A major part of the study was to determine if any changes in attitudes of teachers and information about gifted children occurred during the two year period when special supervisory services were provided and programs were being established. This report is an attempt to determine if changes occurred in the attitudes and information of teachers about gifted children.

PURPOSE OF STUDY

The purpose of the present study was to determine if changes occurred in the attitudes of teachers toward gifted children when they were directly involved in an on-going program for gifted children.

PROCEDURES

A questionnaire containing 40 items was administered to every elementary school teacher in Portage County in September, 1960. Twenty of the items on the inventory could be classified as "information" items. The remaining 20 were classified as "attitude" items. The 20 items were divided into four groups concerning: definition, identification, characteristics, and procedures. There were five questions in each of these four categories dealing with information about gifted children and five questions in each of these four categories dealing with attitudes toward gifted children.

Two hundred and fifty-six questionnaires were administered in the fall of 1960. This was a 100 per cent return from all the elementary school teachers, grades one through eight, in Portage County. Those teachers of the seventh and eighth grades in junior high schools were not included. At the end of the project, in June, 1962, questionnaires were distributed to every teacher who had been teaching in an elementary grade in Portage County in the Fall, 1960. Only 100 teachers could be located who were still teaching in the County. A number had changed schools within the county, but it was possible to include these. (The large turnover of teachers in the elementary grades in Portage County is clearly demonstrated by these figures.)

Of the 100 teachers who participated in both pre- and post-administration of this inventory, complete sets of responses were obtained from 51 teachers on the Teacher Attitude Items, and 50 teachers on the Information Items. The data were treated for the 100 teachers where applicable, but where complete responses were necessary the smaller groups of 50 and 51 were used.

Listed below are those items as they appeared on the Gifted Child Project Inventory. The teachers were asked to mark a plus in the blank preceding the statement if they agreed with the statement, and a minus if they had disagreed with it. The odd numbered items (items 1, 3, 5 etc.) are classified as Attitude Items, and the even numbered items (2, 4, 6, etc.) are classified as Information Items.

1. The purpose of a definition of the gifted is to limit the number who can take advantage of special opportunities.
2. The term "giftedness" and "genius" mean the same.
3. Grades received in school subjects are an excellent method of identifying the gifted.
4. Selecting the youngest child in a class is one means of identifying gifted children.
5. Gifted children are resented by other children.
6. Gifted children are more attractive than average children.
7. A child who is gifted is capable of taking care of himself in the classroom.
8. Grade skipping is the most desirable type of acceleration.
9. I. Q. is the best single measure of giftedness.
10. There is a general agreement regarding the definition of the gifted child.
11. Teacher judgment is a better means of identifying gifted children than tests.
12. Vocabulary is the best single indicator of intelligence.
13. Gifted children are usually superior in physical development.
14. The gifted child is usually excellent in spelling.

15. Too much attention is being given to slow learners.
16. Research tends to show that acceleration is harmful to children.
17. A definition of the gifted should be established.
18. A person who is selected for the all state basketball team would be considered gifted.
19. Pupil judgment is a better means of identifying gifted children than tests.
20. I. Q. tests include culture factors which influence scores.
21. Gifted children are well adjusted.
22. Good handwriting is a characteristic of children with superior mental ability.
23. Our most neglected child is the gifted.
24. More time needs to be spent on formal reading instruction for gifted children.
25. All children are gifted in some way.
26. A child who displays outstanding leadership qualities would be considered gifted.
27. I have no gifted child in my class.
28. Brighter children are usually only children (have no brothers or sisters).
29. The brightest child I have ever taught was a girl.
30. Interests of gifted girls follow closely those of gifted boys.
31. Too much attention is being given to gifted children.
32. Research shows that gifted children learn more and are better adjusted in special classes than when they are in regular classes.
33. Some word other than "gifted" should be used for such children.
34. Creativity is one of the best indications of giftedness.
35. Gifted children should be identified in the first grade.
36. Group test I. Q. scores are better than individual test scores.
37. Very bright children in the early grades usually "burn out" by the time they are adults.
38. Gifted children come mostly from high income families.
39. Special classes are undemocratic.
40. Enrichment in the regular classroom is the most widely used method of providing for gifted children.

LIMITATIONS OF STUDY

There are several limitations of this study which, quite obviously, must be stated. The Information-Attitude Inventory is, at best, only a beginning attempt to measure these crucial factors. The Attitude Items were more easily stated than the Information Items, partly because of the general disagreement concerning specific factual points about gifted children.

RESULTS

Patterns of Teacher Response on the Gifted Child Project Inventory Attitude Items.

On the Gifted Child Project Inventory, 20 items were so included as to determine teacher attitudes toward gifted children and their education. Complete sets of responses were obtained from 51 among the 100 teachers who participated in both pre- and post-administration of this inventory and these permit us to analyze the results quantitatively.

No criterion (right or wrong) was established. In both pre- and post-administrations, more than 80 per cent of the teachers disagreed with the following statements:

Grades received in school subjects are an excellent method of identifying the gifted.
Pupil judgment is a better means of identifying gifted children than tests.
Gifted children are resented by other children.
The brightest child I have ever taught was a girl.
Very bright children in the early grades usually 'burn out' by the time they are adults.
Too much attention is being given to gifted children.
Special classes are undemocratic.

On the following items, however, the teachers did not agree among themselves in the overwhelming fashion revealed above. In both pre- and post-administrations, no more than 60 per cent of the teachers gave either positive (agree) or negative (disagree) responses to these statements.

All children are gifted in some way.
Gifted children should be identified in the first grade.
A child who is gifted is capable of taking care of himself in the classroom.

On the three items given below, a pre-post difference amounting to more than 15 per cent was observed. In each case, teachers gave negative (disagree) responses more often on the post-administration than on the pre-administration without, however, upsetting the trends revealed in the pre-administration results.

I have no gifted child in my class.

Too much attention is being given to slow learners.

Our most neglected child is the gifted.

A contingency analysis, using the McNemar correction for continuity if applicable, was made on the responses collected from the 51 teachers.

It was observed that teachers changed their attitudes significantly on only two out of the twenty items over the period of two years. These two items are:

Too much attention is being given to slow learners.

I have no gifted child in my class.

The direction of the change on the first statement above was that more teachers who had disagreed with the statement came to agree with it later. The same direction of change was observed on the second statement above.

In addition, there was a change observed on the statement below which almost reached the level of significance ($p = .05$). The item states:

Gifted children are usually superior in physical development.

The direction of the change was that teachers who first agreed with the statement later expressed their disagreement with it.

It is difficult to assess the meaning of these changes without a further exploration of individual cases. To some teachers, the new experiences in the demonstration project undoubtedly served to widen their vision and prompted a re-examination of their belief systems. To others, however, the same experiences might have resulted in strengthening their prejudice and in raising their defense. The same observed change could have resulted either from finer discrimination or from indifferent rejection. In a sense, however, it is encouraging to observe any change at all in teacher attitudes since this means they were, like it or not, affected by what was going on in and around them.

Information Items

On these items, the investigator has some factual bases on which to judge the direction of correct response on each statement. His responses are, therefore, used as the criterion in the analysis of teacher responses.

In both pre- and post-administrations, more than 80 per cent of the teachers gave *correct* responses to the following items:

The term "giftedness" and "genius" means the same. (Disagreed by the majority)

There is general agreement regarding the definition of the gifted child. (Disagreed)

Brighter children are usually only children (have no brothers or sisters). (Disagreed)

Group test I.Q. scores are better than individual test scores. (Disagreed)

Good handwriting is a characteristic of children with superior mental ability. (Disagreed)

Gifted children come mostly from high income families. (Disagreed)

Grade-skipping is the most desirable type of acceleration. (Disagreed)

On the following items, however, more than 80 per cent of the teachers held on to their original, *incorrect* responses over the pre-post administration period.

Selecting the youngest child in a class is one means of identifying gifted children. (Disagreed by the majority)

Gifted children are more attractive than average children. (Disagreed)

More than half of the 100 teachers persisted in their incorrect responses to the following statements:

Vocabulary is the best single indicator of intelligence. (Disagreed by the plurality)

Interests of gifted girls follow closely those of gifted boys. (Disagreed)

Research shows that gifted children learn more and are better adjusted in special classes than when they are in regular classes. (Agreed)

It is to be observed that, on the last statement above, the largest number of non-response (more than ten per cent of the total) was recorded both in the pre- and the post-administrations of this inventory. As a matter of fact, the investigator himself is not entirely sure of the "correct" response in this case because of an unfortunate rewording effected upon the original statement in the process of reproduction.

Over the pre-post administration interval of two years, a reversal in response patterns was observed in the teachers' responses to the following statements. In each case, teachers gave the correct response (agree) more frequently in the pre-administration than in the post-administration. Such a change (more than 25 per cent of the total responses) merely brought forth a closer balance between those who agreed and those who disagreed without resulting in a clear-cut choice pattern, because more than half of the teachers had originally given the incorrect response to these statements.

> A person who is seleeted for the all state basketball team would be considered gifted.
>
> A child who displays outstanding leadership qualities would be considered gifted.

On the following item, more than ten per cent of the teachers changed their response from "agree" to "disgree," thus enlarging the margin between the correct choice (disagree) and the incorrect one over the two year period. In the pre-administration, teachers were almost evenly split between "agree" and "disagree."

> The gifted child is usually excellent in spelling.

Again pending a closer analysis of the results, it might be suggested here that no spectacular overall change occurred in teachers' knowledge about giftedness and the gifted child over the two year period. However, the teachers seemed challenged to re-examine their definition of the gifted child and, hence, to broaden their concept of human talents. Such challenge is indeed a desirable product of any demonstration project.

Gains in Information During the Demonstration Project

As noted previously, the Gifted Child Project Inventory was made up of two groups of items, one concerned with information on the nature of giftedness and on the characteristics of gifted children and the other, with attitude toward giftedness and gifted children. The former allows us to quantitatively evaluate gains, if any, in information on the part of the participating teachers over the interval of two years.

Although 100 teachers participated in both the pre- and post-administrations of this inventory, only 50 of them gave complete sets of responses. The results of analyses presented in this section are, therefore, based upon the protocols from these 50 teachers.

There are 20 items on this information scale, divided into four groups: Definition, Identification, Characteristics, and Procedures. It was observed that certain items are correctly responded to by the majority of the teachers, while others are answered incorrectly in a similarly overwhelming fashion.

Examples of items belonging to the former group are:

The term "giftedness" and "genius" mean the same.

Grade-skipping is the most desirable type of acceleration.

Brighter children are usually only children (have no brothers or sisters).

Examples of items belonging to the latter group are:

Selecting the youngest child in a class is one means of identifying gifted children.

Gifted children are more attractive than average children.

Interests of gifted girls follow closely those of gifted boys.

These closely follow the pattern revealed by the larger population of 100 teachers (which include the 50 teachers discussed in this section). The trends observed in the responses of these 50 teachers might, therefore, be representing those shown by the larger group.

It was also observed that these teachers had the most trouble with items concerned with characteristics of gifted children and the least with those on procedures. In every item group, the number of teachers giving correct responses increased from the pre-administration to the post-administration. The largest gain is in the Definition group, followed by Procedures, Identification, and Characteristics, in that order.

Out of the 50 teachers, 33 showed an increase in their scores from the pre-administration to the post-administration, and 12 gave no change, while five of them revealed a decrease. The mean score for the pre-administration was 12.18 and that for the post-administration, 13.62. The increase in the mean score is significant at the one per cent level ($t=5.399$, $d.f.=49$), and we might thus conclude that there was a definite increase in teachers' knowledge about the giftedness and gifted children within the two years' interval of this demonstration project.

Such an encouraging sign of increased information must, however, be viewed with caution since the reliability of the scale seems to be rather low. When the Hoyt method[1] was used to estimate the reliability of the 20-item scale as a whole, it was found that the internal consistency of these items, purported to measure along the dimension of information and knowledge, was quite low. This is understandable because the inventory was in its experimental stage without any technical refinement. Hopefully, our future work on this instrument will bring about a more dependable inventory on the gifted child and his education.

---

[1] Hoyt, C. "Test reliability estimated by analysis of variance." *Psychometrika,* 1941, *6,* 153-160.

SUMMARY

One of the stated purposes of the demonstration project was to broaden the concept of giftedness. It would appear from this inventory that the project was successful in doing this. It is noteworthy that the item on which there was most agreement concerned grade-skipping. Only one of 100 teachers thought that it was the most desirable type of acceleration at the pre-testing, and there was 100 per cent agreement that it was not the most desirable type of acceleration in the post-testing period. The one hold out in favor of grade-skipping apparently changed her mind over the two year period. Only one of the teachers in the pre-testing thought that too much attention was being given to the gifted, but at the end of the two year project the number believing that this was so had increased ten per cent. Attitudes did not appear to change drastically, except in the area of definition. On information items the teachers had most difficuty with those concerning characteristics of gifted children and least difficulty with those on procedures of educating gifted children. Thirty-three of the teachers showed an increase in their scores from the pre-administration to the post-administration, 12 gave no change, while five of them revealed a decrease.

There is a definite need for further work on instruments which will measure attitudes and basic information about gifted children. The present instrument must be considered only a beginning toward this goal. It served the purpose in the present project of giving direction to those working in the project, and providing an instrument which made teachers immediately aware of their involvement in the project.

THE SOCIAL RELATIONS OF GIFTED ELEMENTARY SCHOOL CHILDREN IN REGULAR AND IN ABILITY-GROUPED CLASSES

MARLENE MILLER
Kent State University

In the last fifty years, an increasing amount of research and experimental work has been performed with regard to the characteristics of gifted children, and more recently, with the effects which ability grouping in the schools has upon gifted children. The quantity and conclusiveness of research concerning *academic* gains resulting from such grouping is much greater than that dealing with the *emotional* and *social* effects.[1]

This paper will not concern itself with the academic development of the gifted child in either the regular classroom or the grouped classroom. It will not attempt to justify or condemn ability grouping on these grounds. It starts with the assumption that ability grouping is academically advantageous to the gifted child. The purpose of this paper is to try to determine what, if any, are the socially detrimental effects of ability grouping in elementary school; and if these effects are necessarily inherent in the practice of grouping or if they can be improved by changes within a grouping framework.

In order to determine this, we will (1) study gifted children's social relations in regular classes *before* grouping and then (2) study gifted children's social relations in classes formed *after* ability grouping. The accuracy of conclusions formed will be reduced by the fact that the same children were not always used in the regular and special classes and therefore are not entirely comparable in the two situations. Also, different studies have no doubt used different definitions for "gifted," "bright," and "above average." When definitions were supplied, I have tried to take these differences into consideration, but terms were not always explicitly defined. Not enough information on the socio-economic status of the children was available to be dealt with significantly in this paper. No differentiation between the two sexes' social relations was attempted, although practically all the studies involved a fairly equal number of each sex.

The sources cover the elementary grades one to eight, with grades two to six receiving more attention than grades one, seven, and eight.

The area of greatest concentration was grades four and five. Most of the studies were concluded in city school systems and involved 200 to 400 children.

An examination of the evidence concerning social relations in regular classrooms indicates that the stereotype of the gifted child can be fully ascribed only to the highly gifted. Hollingworth is referring to children having an I.Q. score above 180 when she speaks of the isolated child who isn't interested in playing with his mentally immature classmates, yet isn't accepted by the older students who are his equals in mental age.[2] She mentions that children of 140 I.Q. score or less have much fewer adjustment problems.[3] Scheidemann's description of the quiet, solitary child who prefers older playmates also is more applicable as the child's I.Q. score increases.[4] Students of 170+ I.Q. score definitely have considerable difficulty adjusting to classmates in a regular classroom.[5] Anderson says that gifted children above an I.Q. score of 150 are generally not readily accepted by their more average peers.[6]

Children of above average intelligence who do not score much higher than 150 on I.Q. tests are at least as popular and often more popular than children of lower intelligence in elementary school. In Grace and Booth's study of 294 children in six grades of an urban elementary school, children were asked to name three classmates with whom they most often did things, and then three near whom they would like to sit. They found that gifted children definitely could not be considered social isolates.[7]

Robert V. Miller did research involving 120 children in the fourth and sixth grades scattered among 11 buildings. There were 20 students in each of his three I.Q. groups at each grade level (fourth and sixth). The I.Q. groups were set up as follows:[8]

I.Q.	*Term*
120-140	superior
90-110	typical
60-80	retarded

Through sociometric research, Miller concluded that, "The superior were most wanted as friends by their classmates." [9]

Gallagher's study of 335 children in 12 classrooms of eight schools in the Midwest, grades two to five, employed sociometric methods. ("Write the names of five of your best friends.") This investigation showed the bright children as a group to be more socially popular than any other group.[10]

Using a case study approach, Gallagher and Crowder examined 35 students in regular classrooms, grades two to five, with I.Q. scores of 150 or above. They used sociometric questions, carefully worded to indicate friendship rather than desire for academic help. The questions were administered to all the children in each class and each child was ranked according to the number of choices he received. Over 50 per cent of the gifted children were ranked in the top fourth of their classes. Over 80 per cent placed above the median for the class. About 20 per cent had some difficulty in social relations.[11]

On the other hand, Vera Miller, in her work with third graders of Evanston, Illinois, stated that sociometric research in the regular classroom indicated no significant correlations between intelligence and popularity except in the case of choices for science experiment partners and class presidents. "The children apparently did not base their likes or dislikes on the intellectual level," she concluded.[12]

Zander and Van Egmond also found a low correlation between intelligence and social power, a plus .20 for boys and plus .28 for girls.[13] Their study covered 418 children from 16 second grades and 16 fifth grades. They measured social power by having each student rate his classmates with a four-point system based upon this question: "Who can most get you to do things for him?" Boys seemed to need *either* high intelligence (top one-third of class) *or* high social power in order to enter actively and be received well in group projects. One characteristic seemed to serve as well as the other for this purpose, and the possession of one did not necessarily insure possession of the other.[14]

The results of these studies seem to indicate that bright children are either more popular than other children or there is no significant difference between their popularity and that of the rest of the children, with somewhat more support for the former. Additional findings in some of these investigations make the conclusions perhaps more significant.

Grace and Booth, for example, found that one-third of the gifted children did not make their scholastic ability noticeable enough to cause their classmates to choose them in answer to the question, "Which three children in your room do the best schoolwork?"[15] Gallagher and Crowder also mentioned that "subjective impressions" led them to suspect that some of the gifted children were concealing their academic ability to achieve social status.[16] Robert Miller found no evidence that the superior students' scholastic talents were unknown to the rest of the class, but one must remember that his superior students, by definition, never had I.Q. scores higher than 140.[17]

Another consideration which must be acknowledged in evaluating this research is the concept of socioempathy. ". . . . a person may be said to have good socioempathetic ability if he can accurately predict the relative degree of acceptance or rejection accorded the component members of the group (including himself) by other group members." [18] This social insight seems to be aided by high intelligence. Robert V. Miller discovered that superior students could most accurately predict others' answers to sociometric questions and thereby their own and others' social status.[19] Gallagher, too, found the bright students to be most successful in predicting others' choices.[20] As Robert Miller suggests, perhaps gifted children are not liked because of their intelligence, but *because* of certain personality traits which they can more easily develop due to superior socioempathy.[21]

Having examined other children's attitudes toward the gifted child, now let us consider *his* attitudes toward *them.* Does he tend to choose highly intelligent friends in the regular classroom?

Almack, using research on 387 children from grades four to seven in San Jose, California, stated that children tended to choose associates from "their own mental level." [22] Jenkins' investigation of 280 junior high students in Riverside, California, revealed a tendency to choose friends of the same approximate intelligence.[23] Robert V. Miller's superior students chose superior friends to a significant extent.[24]

Barbe studied 244 children, from grades four to seven in three elementary schools in Kent, Ohio. Their I.Q. scores ranged from 67 to 140, with the mean being 104. Each child was asked to list his three best friends. The bright children chose mostly children from the above-average group, but only 30 per cent from the superior group of which they were a part. All the children chose slightly above their intelligence level except the bright students who perhaps were forced to choose down because of limited numbers in their group.[25]

Gallagher, however, found in no grade except the fourth did the bright children significantly select bright children for their friends. Their choices were determined by asking them to write the names of their five best friends.[26] In a review of research on the subject,Gallagher generalizes that elementary children do not rigidly adhere to their intellectual level when choosing friends.[27]

What can be concluded about the social relations of gifted elementary children in the regular classroom? Except for the very highly gifted, there is considerable evidence that bright children are more popular than the less intelligent. There is, however, some reason to believe that these students are gaining this popularity by "playing down" their academic gifts. The fact that they exhibit better socio-empathy also suggests that if they are liked, it is not because of their intelligence, but because of traits that the presence of intelligence enables them to develop more readily. These two considerations plus the apparent importance of geographical closeness in the friendships of elementary children[28] and the results indicating no significant correlation between intelligence and popularity would seem to somewhat reduce the force of the studies showing greater popularity for more highly intelligent children in the regular classroom.

A study of gifted children's attitudes toward other children revealed that in practically all studies they tended to select friends of above average intelligence. The evidence does not seem to support the notion that this choice remains rigidly within the highest intelligence group. Almack's "their own mental level" and Jenkins' "same approximate intelligence" are both rather broad terms. Barbe's bright children chose only 30 per cent from their own specific group, while Gallagher found little significant choosing among bright children. It would seem that elementary children prefer their approximate equals in intelligence, but are not overly attracted to children of their exact I.Q. level.

Most of the research concerning the effect of ability grouping on social relations has been performed in the last few years. One of the earlier studies, by Goodrich, reported that according to 400 superintendents, principals, and teachers representing every state, students' attitudes toward each other within the special classes were four times as good as in regular classes.[29] Woods, whose study is summarized in a volume released by the White House Conference on Child Health and Protection, compared 340 children with an average I.Q. score of 136 with 373 children whose average I.Q. score was 137. The first group had been placed in special classes; the second attended regular classes. Each child was rated on a five-point scale by his teacher and his principal in regard to certain traits. No increase in seclusiveness was observed, and the social adjustment of the special class students was generally good.[30] The White House Conference, after reviewing the available research, also expressed the opinion that gifted children showed no significant gains in snobbish or undemocratic attitudes.[31] Gallagher, also supports this view.[32]

Kerstetter compiled data on children of 160 I.Q. score or above who were attending special classes in New York City. She found them to be socially well adjusted in the special classes.[33]

Greater scholastic and social gains than in the regular classroom were reported by Schwartz, who investigated 200 matched pairs of gifted students in New York City elementary and junior high schools.[34]

On the negative side, Goodrich discovered considerable feeling among administrators and teachers that some snobbishness tended to develop as a result of ability grouping. These people did, however, strongly express the belief that much of this depended upon the teacher's attitude. "If the spirit of the school or that of a large part of the teaching force is one which tends to foster class distinctions, homogeneous grouping is almost certain to aggravate its evil effects."[35]

In another project, when those elementary children of 150 I.Q. score and above were placed in special programs, their social acceptance was slightly lower in the regular classroom.[36]

The bulk of research, however, seems to indicate no significant changes in social relations resulting from ability grouping. Goldworth investigated children, grades four to eight, who attended part-time special classes. She found "no significant differences" between the control and experimental groups in their regular classroom social relations.[37] Bell also discovered no personality differences between gifted children in special classes and those in regular classes.[38] Gallagher comes to the general conclusion that "Special programs for the gifted do not seem to modify, to a significant degree, their popularity, although this point still needs close investigation."[39] Friedman, in her article in the *Encyclopedia of Modern Education* says, "Schools that have adopted ability grouping have had no significant increase or decrease in maladjustments."[40]

An interesting bit of research was done by Mann in the Colfax Elementary School in Pittsburgh. Here the children spent part of their day in special classes and part in regular classes. By using sociometric questions for the children and questionnaires for the parents, Mann found that the gifted children chose mostly gifted children for friends at school and playmates at home. They did not choose acquaintances from their regular classes. These relationships, Mann declared, were not "significant enough to be classified as friendships."[41] This would suggest that when the gifted have the opportunity, they will choose gifted children even though they have some classes with average students. Another important aspect of this study should not be overlooked. This is the fact that while the gifted did choose many more best friends from the special classes, they also *rejected* about five times as many gifted children as they did average children. This fact does not support the idea that the gifted chose the gifted because of their intelligence, but perhaps because they had more opportunity to know these children better and had more basis for liking or disliking them.

Barbe's study of some evaluations of the Major Work Program's special classes in Cleveland Schools casts some doubt on the idea that gifted children in special classes have no desire to associate with other children. Barbe, in 1955, asked all the students who had participated in the program between 1938 and 1952 to answer the question, "What is your opinion of special classes for gifted children?" The least liked aspect for female students was lack of social contacts with other pupils. This was listed second in importance by male students.[42]

To summarize the effects of ability grouping on social relations, gifted children seem generally to adjust well within the special classes in elementary school except when teachers encourage snobbish attitudes. Not so plentiful or conclusive is the evidence regarding their relations outside the special class. One study reported lower social acceptance for them in the regular classroom after grouping, but the difference was described as slight and all of these children tested above an I.Q. score of 150. Most of the research indicates no significant effects on social relations, negative *or* positive. Mann showed that the gifted tended to choose and reject many more children from the special classes than from the regular classes. Barbe's study would indicate some interest in contacts outside the special classes.

Using the research cited and the conclusions drawn from this research, what educational adaptations seem to be in order? Is ability grouping in elementary school detrimental to the social relations of the gifted? It seems that the persistent factor in both the studies of regular classes and those of special classes is an insignificant relationship. The regular class studies showed either insignificant relationships between intelligence and popularity or slightly higher popularity for the more intelligent. In the special classes there was much indication of no significant changes from the regular classroom. It seems that children of this age do not consistently base their friendships on close intellectual likenesses, but do tend to like the more intelligent because of personality traits that superior socioempathy makes possible.

As Gronlund says, there is relatively low correlation between intelligence test scores and popularity, although superior students as a group are most popular. She suggests a relationship something like the one that exists between intelligence and achievement. As with achievement, low intelligence is a great hindrance to popularity, but high intelligence is no guarantee that one will gain popularity.[43]

Unless his I.Q. score is too far above 150, the gifted student seems to adapt reasonably well socially to regular classes, and appears to adjust well within special classes. In either situation, he chooses above-average children for best friends. Geography does have much influence on whom he actually picks within that range; he seems to find friends from whatever group is close to him.

Since the gifted student is popular and can find friends fairly well in either case, he could probably adjust well to either situation. Considering the fact that there is evidence that he somewhat hides and limits his intellectual powers to gain popularity in the regular class, and since he probably can gain academically from special classes, an ability-grouping program seems to be a feasible plan.

Operation of the program on a partial segregation basis seems desirable, at least until additional research could more conclusively prove that the gifted are not interested in making friends outside the special classes. Even if the gifted did not list any of their acquaintances from regular classes as best friends, I would hesitate to say that they had therefore gained nothing from associating with them. Their outstanding socioempathy is a very valuable trait and will serve them well in later years. It is conceivable that this ability to see into social situations and to judge others' feelings and attitudes might not become so well developed if a gifted student was never in contact with anyone below his intellectual level.

If some classes such as art, music, physical education, homeroom, and all extra-curricular activities included all the children, the whole system would be more flexible. Those students with extremely high I.Q. scores would naturally choose practically all their friends from the special classes, while those with perhaps an I.Q. score of 120 would tend to find friends among the dullest in the special classes and the smartest in the regular classes.

Finally, as some of the research indicates, our attitudes as adults would greatly influence the success of any ability grouping program. To have each child learning to his capacity in special classes and yet associating successfully and happily with students of all intellectual levels is indeed a worthy goal. But young gifted children in elementary school will not long retain this democratic attitude of accepting individual differences without snobbishness if we as adults reflect the attitude that superiority in intelligence indicates superiority in all facets of the person.

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A STUDY OF CERTAIN FAMILY AND PERSONAL DYNAMICS ASSOCIATED WITH SCHOOL ACHIEVEMENT AMONG GIFTED CHILDREN

Paul H. Holcomb and George E. Hill
Ohio University

The Division of Special Education of the Ohio Department of Education authorized a study of certain family and personal dynamics associated with differences in tested achievement among gifted children. The study was conducted in such a way as to yield suggested principles and procedures for modifying school practices to better meet the needs of gifted children and to encourage their optimum achievement.

THE PROBLEM

Do children who have been verified as having high intellectual ability, but whose tested school achievement is significantly different, differ significantly regarding certain personal and family characteristics? If there are differences between higher and lower achieving gifted children, might these characteristics of the lower achievers be so dealt with by the school and other agencies as to enhance their achievement? Having carefully identified a population of bright children and having paired higher and lower achievers, these pairs have been compared upon several bases to help determine how the above questions can be answered and to delineate the various facets of the answer.

The major emphasis of the study—in this comparison of bright children who differed significantly in tested achievement—has been to seek and to apply means of gathering data about these children that might seem most promising for general educational use. More investigative devices were employed than would ordinarily be possible to employ with all highly intelligent children in a sizeable school population. This was done because it was assumed that some procedures would prove to be less usable, or productive, than others. In fact, an important objective of the study was to test the feasibility of both familiar and experimentally unique procedures in assessing differences between the higher and lower achievers. The directors, consultants, and field workers held several full-staff meetings over a period of eight months discussing possible methods of study, reviewing the findings of trial procedures on samples of children, reviewing past research, and planning the field data gathering procedures. *No procedure was employed that had not been carefully tested* with appropriate grade groups of children known to be no more intelligent than the proposed research sample.

DEFINITIONS

Gifted Children

Children between grades 4 and 10 of selected public schools whose intelligence quotients on the Stanford-Binet (Form L or M) or the *Wechsler Intelligence Scale for Children* were verified to be 130 or higher. Four of the 100 children received the W.I.S.C.; all others received the Stanford-Binet.

Family and Personal Dynamics

Characteristics of children suggested by previous research to be involved in the complex of forces which determine the effectiveness with which children face the tasks of development. Such dynamic characteristics as the child's concept of self, his educational and vocational aspirations, his and his parents' social attitudes, his peer associations, his family's social position and ideals, and those insights regarding himself which he is willing to reveal through such devices as autobiography, personality inventory and the like.

Higher and Lower Achievement

Composite standing on a standard achievement test battery was the basis for determining the child's level of achievement. The two children in each pair of children studied differed on battery score by at least one standard deviation. Thus, higher achievers, pair by pair, had scored at least one standard deviation above their lower achieving study mate.

PROCEDURES

Of the great multitude of data-gathering procedures studied and evaluated by the research team, the following were selected and applied:

Procedures Involving Subject Self-Reporting

It was assumed that much that must be determined to understand a child must be gained by skillful use of self-reporting devices. Six were used. Three of these were published instruments, one (*The Social Distance Scale* was an adaptation of a published scale, and two were instruments developed by the research staff.

1. *The California Test of Personality*

   This inventory was administered to the thirty-one pairs from Bedford and Salem, and not to the twenty-four pairs of children from the other three communities.

2. *The Gough Adjective Checklist* (16)

   This checklist of 300 adjectives gives the child a chance to characterize himself as he sees himself. It yields scores of special interest in regard to the child's self-concept.

3. *The What I Think Inventory*

   This was developed by the research staff in an effort to assess the child's educational and occupational demands, as well as what he thought his parents' perceptions of his educational and occupational possibilities might be.

4. *The Lee-Thorpe Occupational Interest Inventory*

   (Level of Interest Section) The purpose was to determine if higher and lower achievers differed significantly in general level of occupational aspiration.

5. *The Social Distance Scale*

   This was an adaptation of the well known procedure developed and widely used by Bogardus and others. (6) It seeks to establish how accepting children are of people of different social, ethnic, economic and cultural groups.

6. *The Autobiography*

   A semi-structured autobiographical form was developed through much experimentation. It was hoped that what children wrote would reveal how they perceived their lives and how they looked to the future.

It should be emphasized again that all of these, and other instruments, were tried out with various groups of children in the Athens area. No instrument was employed in the study that was not, to the satisfaction of the research team, shown to be possible for fourth grade children of at least average ability to answer without vocabulary difficulties or difficulties of understanding. The instruments were adminstered to the subjects of the study individually. Some use was made of small groups where this proved possible. In all cases the instruments were administered by a research team number.

With the exception of the autobiography, these instruments all yielded quantitative scores which could be analyzed statistically. Even the autobiographical material was subjected to a limited quantitative analysis on an experimental basis.

Procedures Involving Observation and Observer Estimates

Three procedures were used which involved research staff members observing the child's home and peer relationships:

1. *The Packard Modification of Social Position Scale*

   Using the scales developed by Warner and his associates, Packard developed a very usable scale of social position which utilizes five levels. (23, 31) A self-reporting socio-economic status device was also used—Hieronymus' revision of the Sims Score Card of Socio-Economic Status.

2. *Peer Associations*

   Each child was asked to name his three best friends. Alphabetical lists of these names were arranged by school and a school staff member rated these peer associates as to desire to excel in school.

3. *Parent Interviews*

   One or both of the parents of all 110 children were interviewed by a trained, experienced case worker. The interviews were standardized to some extent by the use of a schedule and were, in most cases, carried on in the homes. A few parents expressed the desire to be interviewed at the school.

HYPOTHESES TESTED

The basic hypothesis of this investigation was that highly intelligent children who differed significantly in tested school achievement would also be found to differ in certain personal and family dynamics. More specifically, the following hypotheses were formulated:

Higher achievers differ from lower achievers in regard to:

1. Certain personality assessments provided by the *California Test of Personality*
2. Their self-concepts (self-acceptance, self-criticality, etc.) as measured by *Gough's Adjective Checklist.*
3. Their levels of educational and occupational aspiration and their concepts and their parents' concepts of themselves educationally and occupationally as assessed by the *What I Think Inventory.*
4. Their level of occupational interests as tested by the level scale of the Occupational Interest Inventory.
5. Their attitudes toward persons from various cultural and economic groups as assessed by an adaptation of the Bogardus social distance scale.
6. Their self-concepts as revealed by a structured autobiography.
7. Their family's social position as shown by the Packard Modification of the Social Position Scale.
8. The attitudes of their best friends toward school achievement.

9. The ideals, expectations, and acceptance attitudes toward these children held by their parents, as revealed through personal interviews.

A second general hypothesis explored in this study was that certain fact-finding procedures might be useful to school programs for the study of gifted children so that personal and family dynamics found to constitute possible barriers to achievement might perhaps be dealt with more effectively. Ambitious as this hypothesis sounds, the investigators labored under no naive illusion that schools could always remove these "barriers." At least the schools should sharpen their understandings of what forces impinge upon the child of high intelligence and which of these seem to favor and which to hamper achievement.

It should be said that the research team fully expected these academically gifted children not only to differ in some respects, but also to be alike in many respects. At the outset of the study, the only way in which it was known that they differed significantly was in tested school achievement. It was especially difficult to find lower achievers, since most bright children in these schools tested above their actual grade placement.

THE POPULATION STUDIED

The goal was to find at least fifty well-matched pairs of gifted children whose tested school achievement differed significantly. It was assumed that, with an I.Q. score of 130 set as the cutting point for giftedness, this would require searching through several grade levels in several schools. This assumption was correct. It was decided to study children in grades four through ten. The lower limit seemed feasible in two respects: earlier studies have shown that achievement differentials tend to be well established among children by the fourth grade and the expected use of self-reporting instruments seemed feasible by this level of schooling. The upper limit represented the highest grade in which the children would have had a standardized achievement test of basic school subjects within one school year.

The school records of the children in five Ohio school systems were examined. The systems involved and the variations in approach are shown below:

1. Nelsonville, Logan, and Worthington districts. The school records of grades 4, 6, and 8 were systematically searched. In Nelsonville the 9th grade records were also searched. All children found to have group I.Q. test scores of 125 or above were then administered the *Stanford-Binet, Form L.* There were 240

children given the Stanford-Binet for this purpose. This testing was done by qualified psychometrists and school psychologists.

2. Bedford and Salem districts. Most children in these districts had received individual intelligence tests prior to this study. Of the 62 children forming the 31 pairs from these districts, 58 had been given the Stanford-Binet and four the *Wechsler Intelligence Scale for Children.* These had been administered, by calendar years, as follows:

   1960—14
   1959—14
   1958— 9
   1957—5
   1956—3
   1955—5
   1954—8
   1953—3
   1952—1

   All of this testing was done by school psychologists. The basic method of identification was, in Bedford and Salem, the same as in the other districts except that group test results were not needed for preliminary selection.

Recent achievement test scores were available in some schools and not in others. Where not available, the team administered the *California Achievement Test Battery.* Battery scores in terms of grade placement were available for all children. All achievement scores were gathered during 1960.

All children with individual I.Q. scores of 130 or above were studied by using the school records. Pairing was done so that sex, school attended, and grade in which enrolled were held constant. Achievement battery scores were always from the same battery and administered at the same time for both members of the pair. Children paired in all instances had scored at least one standard deviation apart on the achievement test battery. Achievement tested in all instances was basic school achievement in reading, English usage, spelling, and arithmetic. The Nelsonville, Logan, and Worthington pairs were administered the *California Achievement Test* in the fall of 1960. The Bedford pairs had the *Iowa Test of Educational Development* in the fall of 1960. The Salem pairs took the *California Achievement Test* in April, 1960. Battery-wide scores were verified and the standard deviations for the normative populations were secured from the two test publishing companies.

It should be made clear that the selection of these children, forming the 55 pairs of the study, was not a random selection; it was a deliberate attempt to pair children with I.Q. scores of 130 or over on the basis of sex, grade in school, and school building. One child in each pair was to be a higher achiever, the other a lower achiever on the basis of a standard deviation difference in grade placement score on the test battery. Many children with I.Q. scores of 130 and over were not used, mainly because of the relatively small number who differed enough in tested achievement.

The general classification of the children (1960-61 school year) by sex and grade follows:

Grade	Male	Female
4	12	3
5	5	2
6	5	6
7	2	1
8	5	4
9	4	4
10	2	0
	35	20

Predominantly, the children came from upper grades and junior high school. The heavier proportion of boys was due to the fact that fewer girls having a high I. Q. score differed significantly in tested achievement; a finding consistent with that of several other studies. (27, 45, 17)

Tests (t tests) were run on the significance of the difference between the means of higher and lower achievers, by sex, I. Q. scores, and achievement grade placement. The differences between higher and lower achievers as to I. Q. score were not statistically significant. It can be concluded that the 55 pairs were essentially comparable in tested intelligence.

The difference between higher and lower achievers as to tested achievement was statistically significant at the one per cent level of confidence. It can be concluded that the 55 pairs differed in tested achievement in a manner not due to chance. Actual grade placement at the time of testing was subtracted from achievement grade placement as shown by the battery score. The means, standard deviations, standard errors of the means, and the t tests for differences in means were calculated. The obtained differences in both boy's means and girl's means were significant at the .01 level of confidence, with the higher and lower boys differing more than the higher and lower girls.

Only seven lower achievers scored below their actual grade level on the achievement test battery. Six of these seven were boys. While one could hardly be satisfied with at-grade-level achievement from a child as bright as these children, it is clear that very few of them in the school populations studied could be identified as "low" achievers, if only their tested achievement were scrutinized. Considering the determined search required to find lower achievers for the matched pairs of this study, the identification of seven below-grade-level achievers among 55 lower achievers should *not* be interpreted as meaning that over ten per cent of the brightest children in these schools achieved below grade level.

THE SCHOOLS INVOLVED

The schools involved in this study have been identified for two reasons. First, the research team and the writers wish to give full credit to the staffs and to the children and their parents for the most cooperative assistance which they rendered. Their reactions were uniformly helpful and courteous. Without this fine attitude the study would not have been possible.

Secondly, the districts involved differ in enough ways to lead us to believe that the findings of this study are not restricted to a particular type of community.

Bedford is an old city which lies fourteen miles southeast of the Cleveland Public Square. In this century it has been an industrial city. Products from Bedford are office furniture, rubber goods, machine tools, and dog food. A Ford Stamping Plant employing 2,500 workers lies just south of Bedford in Walton Hills. The Bedford School District includes Bedford, Bedford Heights, Oakwood Village, and Walton Hills. The combined population was 25,553 in 1960. With the industrial expansion in Northeast Ohio since 1950, the Bedford School District has more than doubled in population.

Salem is about twenty miles southwest of Youngstown. It was settled by Quakers in 1806. It is an agricultural center supported by several industries whose products include: automobile bodies, porcelain products, machine parts, and electric furnaces. The population of Salem in 1960 was 13,854. In 1950, it was 12,754.

Nelsonville is located twelve miles northwest of Athens. It is nestled among the hills of Southeastern Ohio in the center of a one time booming coal industry. Most of the large mines are worked out and closed. Today, Nelsonville produces brick, wood-working products, and shoes. Though most industrial areas are experiencing a population explosion, Nelsonville has lost almost ten per cent of its population since 1940. The population in 1960 was 4,834.

Logan lies in an agricultural area twelve miles northwest of Nelsonville. Its industries produce brick, pottery, shoes and furniture. It has experienced a seven per cent growth in the last decade. In 1960 the population was 6,417.

Worthington, ten miles north of downtown Columbus, is a residential area. Its population has increased from 2,141 in 1950 to 9,239 in 1960, 432 per cent.

Bedford has had a staff psychologist since 1945. The testing for all areas of special education and adjustment problems has been thorough. Salem has had the services of a school psychologist for the last three years. Bedford and Salem made all their test data and testing facilities available to the research team. In Nelsonville, Logan, and Worthington all the group testing and the individual psychological testing was provided by the research team.

HIGHER AND LOWER ACHIEVERS— SELF-REPORTED CHARACTERISTICS

In this and the following section the findings of the study of 55 pairs of highly intelligent children will be reported. As was noted in the preceding section, six procedures were employed which entailed self-reporting by the child. The results of these six instruments will be reported in this section.

PERSONALITY TESTING

The concept of personality has variations in meaning for different people. In general, habits, beliefs, attitudes, feelings, and emotional tone form a large part of the pattern which is called personality. These factors are cultivated by the values and goals by which individuals strive to order their lives. In other words, habits, beliefs, attitudes, and emotional tones tend to be products of the struggle to gain and maintain specific values and goals. A study of these personality components might be expected to yield some insight into the influence of cultural values upon academic achievement.

It was not the intention of the investigators to make clinical evaluations of the personality patterns of the persons included in the study. *The California Test of Personality,** a questionnaire type of test, was administered. The test measures two areas, the way one feels about himself and the way he feels about others. It measures these areas from one point of view only, the feelings of the individual taking the test as he reports these feelings.

Twelve minor components, or part-scores, are included in the *California Test of Personality*. These are grouped into two major components: (1) self-adjustment, which includes: self-reliance, personal worth, sense of personal freedom, feeling of belonging, freedom from withdrawing tendencies, and freedom from nervous symptoms; (2) social adjustment which includes: social standards, social skills, and freedom from anti-social tendencies, family relations, school relations, and community relations.

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*Thorpe, L. P., W. W. Tiegs, and E. W. Tiegs. ***California Test of Personality, 1953 Revision,*** Los Angeles: California Test Bureau.

This test was administered to the students who were included in the study in Bedford and Salem. Sixty-two boys and girls, thirty-one pairs in Bedford and Salem, took the test. The test was not administered in Nelsonville, Logan and Worthington. Hence, the sample was slightly more than one-half of the cases in the total study. Impositions on school time because of the individual intelligence testing during the 1960-1961 school year in Nelsonville, Logan and Worthington made the administration of the personality test in these schools impossible.

Since the educational range of the children in the study extended from grade four through grade ten and the children represented a very select group, all standing above an I. Q. score of 130, their scores were not compared with group norms. Comparisons are made within the pairs.

In "total adjustment" for twenty-four pairs, or 77 per cent of the thirty-one pairs which were studied, the higher achievers received higher scores than the lower-achievers with whom they were paired. In four pairs, or 13 per cent, the lower-achievers received higher scores than the higher-achievers with whom they were paired. In three pairs both members of the pairs received the same scores. The ratio representing the number of pairs in which the higher-achievers received higher total scores than the lower-achievers with whom they were paired, compared to the pairs in which the lower-achievers received higher scores than the higher-achievers with whom they were paired, was six to one.

Chi square tests were run to determine if the number of "higher," "lower," and "same" scores for the pairs on each part and the total were significantly different from a chance distribution. The differences were significent at the .05 level of confidence on all six of the "personal adjustment" part scores and on three of the "social adjustment part scores. It is interesting to note that the highest chi square came from differences on "feeling of belonging" and on "school relations" feelings.

With these differences emerging from this type of comparison, simply in terms of which of the pair was higher or lower on the personality test, further analysis was made on the basis of pair-comparisons of actual scores by sex. Mean scores for higher achieving boys and girls and lower achieving boys and girls were computed for all component, or part, scores and for totals. By this more exact comparison, five of the personal adjustment score differences and five of the social adjustment score differences for the boys were revealed to be significant statistically at the .05 level of confidence or better. The "personal adjustment" score means of the boys differed at the .01 level of confidence and the "social adjustment" score means at the .05 level of confidence. Part component score means in "self-reliance" and in "social skills" for the boys differed least; in fact, these were not statistically significant differences.

Differences in means between girl higher and lower achievers were not so great. On component part scores, only freedom from withdrawing tendencies, family relations, and school relations, showed significant differences. Total adjustment and the total personal and social adjustment score means differed significantly at the .05 level of confidence.

It should be noted that both the boys and the girls freedom from withdrawing tendencies, family relations, and school relations scores, differed significantly when higher and lower achievers were compared.

Interpretation

The use of the *California Test of Personality* with 31 of the pairs resulted in finding significant differences between the higher and lower achievers on the test as a whole and on several of the component, or part, scores. Differences in tested personal adjustment were greater than in tested social adjustment; yet one component of social adjustment, school relations, revealed the greatest differences. In general, these findings agree with those of Shaw (28:23) to the effect that "underachievers generally are more negative in their attitudes toward themselves and .... more negative in their evaluations of others."

Because of the rather sharp criticisms of the earlier edition of this test, it may be well to summarize briefly Sims' review in the *Fifth Mental Measurements Yearbook* (8:101-103). Sims says that "some of the criticisms of the early test are no longer valid." Aside from the inherent problems of all self-reporting devices, Sims notes three criticisms:

1. The small number of items per subscore. There being twelve of these, the individual subscore is typically quite small and differences between subjects based upon such small scores are of distinction.
2. Validation of such instruments must be by indirection. This evidence is still, as the manual says, in a state of flux. However, several substantial studies have shown a good degree of relationship between CTP scores and clinical findings.
3. The possibility of random selection of responses by the client would, on this instrument, result in scores indicative of "maladjustment." This is due mainly to the disproportionate number of "no" answers. Careful attention to good client rapport is most important.

In the current study, the writers believe that the use of the *California Test of Personality* has been conducted in such a way as to minimize the first and third of these criticisms. By pairing the subjects and by careful administration of the test, the resulting scores are probably as dependable and as comparable as can be expected from self-reporting instruments.

The results of this study support the conclusion that the *California Test of Personality* would seem to throw light on the personality differences between bright higher and lower achievers, especially the boys. It would suggest the need for helping bright children, both boys and girls, develop stronger feelings of belonging and being accepted in the school situation.

Both boys and girls revealed reactions pointing to problems of family relations. While the school can hardly be expected to manage the families of its pupils, such differences in family relations scores as found here would point to the need for serious efforts in the school in two respects: *First,* a sharpening of the insights of all school staff members to the family relations of children, in this instance bright children, and the fullest use of these insights to help children face, and perhaps accept some, and perhaps try to overcome some of the handicapping effects of family conflicts. *Second,* the pressure on the staff of schools and other community agencies of more adequate professional assistance in working more closely with childrens' parents in fostering wholesome and productive development.

The bright, lower-achieving boy apparently is apt to need special help in developing feelings of personal worth, personal freedom, *belonging, freedom from withdrawing, and nervous symptoms.* While the causes which resulted in the boys of this study reacting as they did have not been determined, it is clear that some bright boys—especially after signs of lower-than-expected achievement arise—will need the special help of counselors in trying to build more favorable feelings about themselves.

SELF CONCEPTS—THE ADJECTIVE CHECK LIST

Of the various personality characteristics of children which have been studied in recent years, the cluster commonly called "self concept" seems to yield the most promising evidences of essential differences between high and low achievers. Comparisons of achievers and under achievers in the more general assessments of personality have been "so conflicting that no final conclusions can be drawn at this time" (26:23). Shaw reported that, "There is general agreement that underachievers generally are more negative in their attitudes toward themselves than achievers. There is also evidence that they tend to be more negative in their evaluations of others."

Numerous theories, including those of Freud, Adler, Horney, Fromm, Rogers, and Sullivan, have stressed the role of the conscious concept of self as a determinant of the individual's behavior. (55) If this is correct, then it would follow that one's self-concept might well affect those behaviors which determine the level of academic achievement. Such a line of argument led the research team to make efforts to throw some light on the self-concept of the fifty-five pairs of children in this study.

The *Gough Adjective Check List* (16) has been widely used in studies of self-concept. Adjective checklists have been shown to represent a method of self-characterization which is easily accepted by people. "The goal of an adjective check list is to present a library of descriptive terms covering the widest possible range of behavior, self-conceptions, and personal values. Adjectives themselves are the natural language of description and are responded to with ease and approval by most persons." (16:109) Gough's adjectives were selected first from 171 adjectives experimentally used by Cattell and were expanded to 300 by rational and experimental methods. The *Adjective Check List* yielded test-retest reliability coefficients averaging .57.

The scoring of such instruments is rather involved, but Gough and his associates have developed a scoring method which proved quite feasible in the present study. Six scores are obtained:

1. Self acceptance.
2. Self criticality.
3. Dominance and self-assurance.
4. Responsibility and conscientiousness.
5. Flexibility.
6. Personal adjustment and morale.

The scoring method for 1 and 2 is based upon the ratio of the number of adjectives checked which were characterized by Gough and his researchers as "self-accepting" or "self-critical" to the total number of adjectives checked by the subject. The scores of 3, 4, 5, and 6 are based upon the sum of those adjectives checked from a list characterized as "indicative" plus the number *not* checked in a list labeled "contra-indicative."

The results of the *Adjective Check List* were summarized in terms of means and standard deviations of the higher and lower achievers for the six scores and total numbers of adjectives checked. The results of t-tests for the various differences were also calculated. These may be summarized as follows:

1. On the "self-acceptance" scale the higher achieving boys scored significantly higher than lower achieving boys. On three other scales—dominance, flexibility and general adjustment—the higher achieving boys scored sufficiently higher to approach the .05 level of confidence, but not to reach it.
2. On the "dominance" scale the girl higher achievers scored high enough to approach, but not to reach, the .05 level of confidence.
3. Differences between boy higher and lower achievers were consistently greater than between girls. Only in total adjectives checked was this not true, and here the differences were not statistically significant for either sex.
4. Variability on the various scores tended to be greater among lower achieving boys than among higher achieving boys, as seen by the standard deviations. This was not true of the girls. As between the boys, regardless of achievement, and the girls, regardless of achievement, the boys had higher standard deviations than the girls on three scores: self-acceptance, self-criticality, and dominance-self-assurance.

It is interesting to examine the *Adjective Check List* scores, pair by pair. To this end, the individual scores for all six parts and total checked were recorded. Examination of this data reveals that there are striking differences among paired comparisons. While many pairs differ little, others differ strikingly. Apparently the results of the *Adjective Check List* might prove to be more useful if treated as an aid to the study of individual children, rather than in comparisons of groups.

Some interesting differences between higher and lower achievers are studied further:

1. None of the lower achievers failed to check at least one self-critical adjective. Three higher achieving boys and two higher achieving girls did not check a single self-critical adjective and thus had zero scores on this part.
2. The differences in number of adjectives checked are especially striking. There appears to be no relationship between this score and achievement level, but it would be interesting to examine this score in relation to other personality and adjustment variables of individual children.
3. On certain scores the proportions of higher achievers to lower achievers who scored higher proved to be significantly different from chance expectation. Chi square tests were made of these

scores. This admittedly cruder test of significance of differences between higher and lower achievers shows that higher achieving boys, on the *Adjective Check List*, tended to score higher in self-acceptance and flexibility and lower in self-criticism. Higher achieving girls tended to score higher than lower achieving girls in responsibility and in personal adjustment.

Interpretation

Clues as to the self-concepts held by these bright children were sought by the use of the *Gough Adjective Check List*. The reactions of the boys to this check list differed from that of the girls. In general, boys who were higher achievers, as against boys who were lower achievers, reacted by selecting characterizing adjectives so as to picture themselves as:

More self-accepting (a significant difference).
Less self-critical.
More dominant and self-assured (near significance).
Less flexible.
Better adjusted and higher in morale.

In general, girls who were higher achievers, as against girls who were lower achievers, reacted by selecting characterizing adjectives so as to picture themselves as:

More self-accepting (slight difference).
Less self-critical (very slight difference).
More dominant and self-assured (near significance).
Equal in flexibility.
Better adjusted and higher in morale (slight difference).

In general, the *Adjective Check List* scores differentiated the boys better than they did the girls.

Individual differences on all scores, both among the higher achievers and among the lower achievers of both sexes, were great. It would appear from these findings that the *Adjective Check List* throws significant light on some phases of the self-concepts of bright children, especially of bright boys. The bright lower achieving boys definitely revealed lower self-acceptance, greater self-criticality, and less self-assurance than their higher achieving pair-mates. The Check List should prove especially helpful in schools where competent staff members are present for careful individual assessment of and counseling with intellectually gifted children. The possible sources of the differences shown in this study through the use of the *Adjective Check List* have not been revealed. The relationship of the Check List findings to the differences in sense of personal worth and in family relations and school relations on the *California Test of Personality* would be well worth scrutinizing.

EDUCATION AND OCCUPATIONAL ATTITUDES AND ASPIRATIONS

The motivational forces that lie behind the school achievement of any given child are complex. It was hypothesized that among these forces there might be attitudes toward schooling, toward achievement, and toward one's life goals that would differentiate the higher from the lower achieving bright children. It was also hypothesized that the child's conception of his mother's and his father's attitudes and aspirations might also play a part in determining his school achievement. An attempt was made to develop an inventory that would reveal the student's:

1. Attitudes toward school and toward his school achievement.
2. Aspirations as to level of education that he expected to reach.
3. Attitudes toward certain life goals, general and occupational.

The student's assessment of his mother's and his father's attitudes and aspirations were also sought regarding the above.

The instrument developed was called the "What I Think" inventory. A preliminary edition was built, the items of which seemed logically to bear on the attitudes and goals sought and which research has shown to be significant in human aspirations. Items that the research team deemed overlapping, or possible of combination, were cut and combined. The second edition was tried with a group of fourth and a group of fifth graders. Items were further clarified and combined into a 60 item inventory. This edition was found to be well understood by average and above-average fourth graders.

Differences

The W. I. T. inventory was taken by all 55 pairs and the results were tabulated for boys and girls. Differences in response were tested by the chi square formula for differences in proportion presented by Dixon and Massey.*

There were seven items on which a chi square significance at the .05 level of confidence was obtained for the boys. On five other items the differences between male higher and lower achievers *approached* statistical significance.

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*W. J. Dixon and F. J. Massey, *Introduction to Statistical Analysis,* New York: McGraw-Hill, 1957.

There were three items on which a chi square, significant at the .05 level of confidence, was obtained for the girls. On four other items the differences between female higher and lower achievers *approached* significance.

The higher achieving boys were *more* apt than the lower achieving boys to:

1. Think that their school achievement was good enough to enter college.
2. Think that they know how to study.
3. Like to make all A's in school.
4. Believe that both their mother and their father think they like school.
5. Believe that their mother and father both agree with their future school plans.

The higher achieving boys were *less* apt than the lower achieving boys to:

1. Be satisfied with some C's in school.
2. Think that they should make lower grades.
3. Think that military service may keep them from reaching what they most want to do in school or in life work.
4. Think that their father thinks that they should study longer on some school subjects.

The higher achieving girls were *more* apt than the lower achieving girls to:

1. Think that their school achievement was good enough to enter college.

The higher achieving girls were *less* apt than the lower achieving girls to:

1. Think that both their mother and father think they should make higher grades in school.
2. Think that both their mother and father think they should study longer on some school subjects.
3. Think that they should make higher grades.
4. Think that they should study longer on some subjects.

Thus the responses on the W. I. T. inventory indicated that higher achievers and their parents held attitudes of greater confidence and satisfaction with school achievement than did the lower achievers and their parents. Definite feelings of parental dissatisfaction were apparently felt by the lower achievers, so far as their school achievement was concerned. The higher achieving boys and girls seemed to be facing the future with greater confidence than their lower achieving pairs. This difference was more true of the boys than of the girls.

Similarities

The higher and lower achievers, both boys and girls:

- — like their teachers
- — think schooling will help them to be successful
- — think they learn a lot in some school classes
- — would not take any life work just for its pay
- — think they usually show good sense when faced with a problem of choice
- — do not care how hard their life work is, so long as they like it

In these reactions these young people showed basic confidence in education and high idealism regarding the role of their vocation in their lives.

Was there evidence of disagreement between the mother and father? The mothers and the fathers, pair by pair, for higher and for lower achievers, for boys and for girls, seemed, in the minds of the children, to agree regarding the items listed. *Both* parents of both the higher and the lower achievers (as the children saw it):

- — want their boy or girl to go to college
- — want their boy or girl to finish high school
- — don't want their boy or girl to make lower grades
- — agree with their boy's or girl's plans for life work
- — know what their boy's or girl's plans are for after school
- — think their boy or girl can do well in life work
- — think their boy or girl can make top grades if they try
- — think schooling adds to future success

On only one pair of items did mothers and fathers disagree much. The fathers, especially for the boys, were seen as more apt than the mothers to "want me to earn a lot of money."

In school, there was little, if any, evidence of parental disagreement on these matters of goals and values, as seen by the youngsters.

Interpretation

The higher and lower achievers reacted to the What I Think inventory in such a way as to reveal both differences and similarities in their attitudes, aspirations and values. The higher and lower achieving boys differed more than the girls. These differences, for the boys, centered mainly around:

- sense of satisfaction with their achievement and with school
- confidence in their ability and study skills
- sense of acceptance and agreement as to their plans on the part of their parents
- sense of parental satisfaction with their school achievement

The higher and lower achieving girls differed less, and mainly as regarded:

- confidence in their academic ability and their effort to achieve
- sense of satisfaction with their achievement and effort on the part of their parents

In general, acceptance of education as of importance in achieving their life goals, and in parental desire for them to achieve well in school, neither the higher and the lower achievers nor the parents differed appreciably.

It is important to note again that each of these children are unique. As 55 pairs of subjects under study, they have on this instrument (the W. I. T. inventory) shown themselves to differ and to be alike. Attention to the common needs of the lower achievers would seem to need to center on better motivation and removal of handicaps to more satisfying achievement. The answers of individual children on such an inventory as the W. I. T. would provide valuable clues to the kind of individualized attention such children as these need. This is especially true in our efforts to understand parental attitudes and expectations and the child's interpretation of these.

LEVEL OF OCCUPATIONAL INTEREST

One's vocation is without doubt one of the most important activities in the lives of all people. Children early become aware of the inevitability of occupation. As they mature they learn something of its variety and range. In America where occupational choices are highly varied, children have considerable freedom in selecting the kind of work to which they expect to devote their lives. Yet, "The life history of the individual is first and foremost an accommodation to the patterns and standards traditionally handed down by his community." (5) The child has before him the examples of work activities of the older members of the family. He is subject to family attitudes, enthusiasms, and beliefs. "It seems probable that the majority of families, at least above the tenement level, are relatively satisfied with what they have and consider it to be natural and necessary. In other words, they have accepted a certain standard of living as appropriate for their group." (23) Warner said, "Because he learns to be a social person through his family of birth, a man will often . . . reproduce in his career much of the social position, attitudes, and behaviors of his own family. Most men follow closely, if not exactly, the occupations of their fathers, and on the whole occupy a similar position in the community." (51)

The present study, however, is not directed toward the discovery of the particular vocational fields to which high I. Q. children are oriented but rather the *level* of their occupational interests. Children tend to adopt the occupational patterns and level of interest of their families. "Level" is used here to mean the position on a continuum from routine menial tasks to highly responsible decision-making occupations which require extensive training and experience.

To investigate this area of values, the *Occupational Interest Inventory** was used. The Inventory yields three groups of scores: fields of interest, types of interests, and levels of interests. Only the levels of interests section was used. This section has thirty questions which can be answered in ten or fifteen minutes. The inventory is standardized for use with individuals in grades seven through the adult ages. It was administered first to two groups of bright fourth and fifth graders not in the study. They responded readily and with understanding. It was then administered to the 110 bright children of this study.

The *Occupational Interest Inventory,* as a measure for differentiating occupational interests has been criticized by reviewers such as Katz. (8: 893-895) Such criticisms, however, do not question the usefulness of the Part II "Level" score as used in this study. Certainly criticism of the *Occupational Interest Inventory* norms need not be of concern here because raw score comparisons have been used to check level of expressed interest, pair by pair.

Considerable variation in the percentages of pairs in which the higher achievers received higher scores than the lower achievers with whom they were paired occurred among the cities which were included in the study. In Bedford, which is the largest city, the higher achievers in eighty per cent of the pairs had higher occupational level scores than the lower achievers with whom they were paired. In Salem sixty-seven per cent of the higher achievers had higher occupational level scores than the lower achievers with whom they were paired. In the three pairs in Nelsonville all of the higher achievers received higher scores than the lower achievers with whom they were paired. In Logan almost a complete reversal occurred. In five of the six pairs the lower achievers received higher scores than the higher achievers with whom they were paired. In the remaining pair both members received the same score. In Worthington, fifty-three per cent of the higher achievers received higher scores than the lower achievers with whom they were paired.

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*Edwin A. Lee and L. P. Thorpe. *Occuptional Interest Inventory* (Intermediate) Los Angeles: California Test Bureau, 1956.

Thirty higher achievers received higher scores than the lower achievers with whom they were paired. Fifty-five per cent of the higher achievers received higher scores than the lower achievers with whom they were paired and thirty-eight per cent of the lower achievers received higher scores than the higher achievers with whom they were paired. In seven per cent of the pairs the higher and lower achievers received the same scores.

The relative score standings were compared by grade level since it is commonly assumed that level of maturity is related to reliability of occupational interests. When the scores of the children in grades four through six are examined separately from those in grades seven through ten, some differences in the scoring pattern appears. The differences between higher and lower achievers on the *Occupational Interest Inventory* level scores appeared somewhat greater for the grades 7-10 children than for the grades 4-6 children. It is probable that as with other interests, the added experience of greater maturity, and the longer impact of cultural forces has tended to develop in the occupational interests of these children differences which more nearly reflect their cultural backgrounds.

The differences between higher and lower achieving boys appear to have been greater than the differences between higher and lower achieving girls.

The chi square procedure was used to test the significance of the difference between frequencies in the selected categories and hypothetical chance distributions of these frequencies. Admittedly the "chance" distributions were quite arbitrary. Assuming that the chance of two children in a pair getting identical scores was less than that of getting different scores, the H (higher achievers receiving higher scores) and L (lower achievers receiving higher scores) *chance* frequencies were hypothesized as equal, and S (higher and lower achievers receiving the same score) *chance* frequencies were hypothesized as one-half the H (or L).

The differences between higher and lower achieving boys were statistically significant when these differences were reported simply in terms of proportions of higher and lower occupational level of interest scores. Differences of the same sort for the girls, and by the two grade groups were not statistically significant. For the entire group, the relative difference in level of interest scores was significant at the .05 level of confidence, as between higher and lower achievers.

When means of level of interest scores were determined and the actual quantitative score differences determined, it was found that the differences in means were not significant at the .05 level as determined by the t test. Again, the differences approached significance when comparing higher and lower achievers at the 7-10 grade level and when comparing boys.

Interpretation

Children in this study at all the grade levels, four through ten, differed one from another in their reactions to the level of interest scale of the *Occupational Interest Inventory*. Some children pitched their occupational interests at the level of rather ordinary semi-skilled occupations. Others pitched their interests up with the most demanding of the professions. It was hypothesized that the level of occupational interest might differ significantly when comparing higher and lower achieving bright children. Two types of comparisons of level of interest scores were made. One involved simply relative score; did the higher achievers score higher than, the same as, or lower than the lower achiever in interest level? On this kind of crude, relative comparison, higher achieving boys were significantly more apt to score higher on the interest level than lower achieving boys. Higher achieving children in grades seven through ten were significantly more apt to score higher on the interest level than lower achieving children. As regards girls and children in grades four through six, similar relative interest level comparisons showed no statistically significant differences between higher and lower achievers.

When the acual quantitative values of the scores were considered, no statistically significant differences were found between the means of higher and lower achievers, in any of the sex or grade classifications. Differences between pairs of boys and between pairs of higher and lower achievers in grades seven through ten, however, were more significant than similar comparisons for girls or for fourth-sixth graders.

The normative data have not been used in making this analysis of *Occupational Interest Inventory* level scores, but the scores of these children have geen compared with the normative data. Differences in interest levels between the higher and lower achievers were so small in part, apparently, because the actual range in interest levels was restricted mainly to the upper half of the normative, or usual, interest range.

Knowing that vocational aspiration level among highly intelligent children is an important clue to their level of life goals, it would appear that some clues as to the level at which bright children are beginning to pitch their career is an important consideration in the school's efforts to encourage such children to the fullest possible use of their abilities. While the *Occupational Interest Inventory* level scores provide a simple way to get such a clue, such evidence can also be secured by less formal means. The point we wish to stress is that educational and occupational aspirations are becoming inextricably tied together in our culture.

This is especially true for the person of superior intelligence. The bright school child must be helped, as early in his school career as possible, to plan his education and his vocation to fit his capabilities. Certainly when children with I. Q. scores of 130 or higher come up with occupational interest level scores as low as some of the children in this study did, it adds force to the need for earlier and more concerted attention to educational and vocational planning among gifted children. This study has shown that some lower achieving bright boys need to be helped to set their career goals at higher levels. If this seems a bit deterministic, we should at least be sure that their lower achievement is not a reflection of having settled, in their own minds, for levels of career goals below their capabilities.

ACCEPTANCE OF OTHERS—"SOCIAL DISTANCE"

Is it possible that children of high intelligence who differ in level of school achievement may differ in their willingness to be accepting toward people of varying occupational or educational groups? Would a measure of what Bogardus called "social distance" (6) reveal attitudinal differences between higher and lower achievers that might help to identify personal and cultural factors which seem to affect level of school achievement? For experimental purposes, an adaptation of the Bogardus social distance scale was administered to the 55 pairs of children.

The social distance scale seeks to assess a person's attitudes toward persons of designated social or cultural groups by asking him to indicate in what degree of intimacy he would be willing to accept individuals of the designated groups. For this study it was decided to deal with two types of groups, those of differing occupational or work levels and those of differing educational levels. Four levels of "intimacy" of relationship were employed: *Marry—Neighbor—Work with—Worship with.* Bogardus has shown these to be distinguishable degrees of intimacy or acceptance.

The number and per cent of children who checked various categories of acceptance of worker categories were reported. The critical ratios greater than 1.00 were calculated. These were based upon Garrett's formula for the standard error of the difference between uncontrolled percentages. To be indicative of a difference statistically significant at the .05 level of confidence, the critical ratio for a difference between higher and lower achieving boys must be 2.00 or greater; for girls, 2.03 or greater.

It should be noted that these children apparently regarded "to work with" as a more intimate relationship than "to be a neighbor." This can be seen on a number of the scales when both higher and lower achievers expressed greater acceptance as "neighbor" than as "work with."

Higher and lower achieving boys again—as in other tests and inventories differed more than higher and lower achieving girls.

1. Higher achieving boys were *more accepting* than lower achieving boys of:
   Professionals (to work with) (to marry)
2. Lower achieving boys were *more accepting* of:
   Clerical and sales workers (as neighbors)
   Housewives (to work with) (to worship with)
   Operatives (to work with)
   Laborers (as neighbors)
3. Higher achieving girls were *more accepting* than lower achieving girls of:
   Professionals (to marry)
   Operatives (to marry)
4. Lower achieving girls were consistently *less accepting* than higher achieving girls in all but two categories: to marry and to neighbor the laborer. None of these differences was statistically significant except the second under "3" above.
5. Girls in both categories were quite consistently more accepting (less distant) than the boys in their reactions.

The attitudes of these children toward people of different levels of education were:

1. Higher achieving boys were *more accepting* than lower achieving boys of:
   Persons of education beyond college (to marry)
   College graduates (to marry)
   Elementary graduates (to worship with)
2. Lower achieving girls were *more accepting* than higher achieving girls of:
   Elementary graduates (to marry) (to work with)

Interpretation

These reactions to persons of various occupational and educational levels would suggest:

1. That the boys were less accepting in general than the girls. Boys may, rather realistically, sense economic and educational distinctions more keenly than girls. They see these as having a bearing upon the achievement of their own success in life.
2. That the higher-lower achievement differences in attitudes as expressed by the social distance scale were more common among boys than among girls. This was consistent with the findings of this study on the other inventories and tests. It would appear that the attitudes concomitant with differences in achievement among bright boys were more distinct, perhaps more keenly imbedded, than among the bright girls of this study. This suggests that changes in attitude may be both harder to achieve among the lower achieving boys and more promising of a positive effect upon their achievement.
3. Attitudes of non-acceptance of persons of lower occupational and educational levels did not appear strongly until the *lowest* levels of work and education were reached. *Both* higher and lower achieving boys and girls were reluctant to think of *marrying* an elementary school graduate or a laborer. Such expressions of attitudes pay a good deal of tribute to the socializing and democratizing effect of our schools and to the practical sense of these bright children.

As an instrument to be used in studying the correlates of difference in achievement among bright children, the Social Distance Scale has shown the higher achievers to be somewhat more confidently accepting of their anticipated role as highly educated workers, in high-level occupations, than the lower achievers—especially the boys.

THE SELF AS SHOWN BY AUTOBIOGRAPHIES

Autobiographies have been a fruitful reservoir of facts and inspiration for historians and novelists since time immemorial. With the advent of psychoanalysis, autobiographies were pressed into a new service and more recently have become a guidance tool in schools and colleges. In this role they serve to give clues to personality conflicts, social adjustment problems, and personal value systems. The writing of autobiographies has been found to have therapeutic value for disturbed persons.

The autobiography was used in this study to assist in discovering values which might enhance or limit the quality of academic achievement among the high I. Q. children. It was somewhat structured in design.

1. It was expected to reveal cultural values of family. Children in families of every social level tend to be loyal to the attitudes and customs of their parents. When such attitudes and customs are in the best interest of high academic achievement, the loyalties which are inspired pose serious problems for schools
2. The autobiography was expected to yield information about the writer's self-concept. Children, by revealing their associations through their autobiographies, indirectly disclose the images which they hold for themselves. They tend to have associations among those who think and act as they do.

One hundred-eight of the 110 children in the study completed the autobiographies and returned them to the research assistants. Two children would not write autobiographies. One of these was a boy in grade six who had a poor academic record and whose conduct in school was disturbingly irregular. The other was a girl, in grade nine, who was a high achiever and cooperated fully with the school. She was active in the music organizations and the science club. She was respected and praised by her teachers, but had few close friends in school. When she was asked to name her three best friends for this study she named two who were not residents of her school district. It seemed that she could not bring herself to review her life on paper, although she was a good writer.

An autobiography is necessarily a subjective instrument for discovering specific and exact information which can be used to make comparisons between children. A list of categories was selected against which particular items in the autobiographies could be checked. The categories were: 1. Hobbies, 2. Responsiblities, 3. Identifications, and 4. Aspirations.

The descriptions and classifications were arranged on forms and given to judges. The judges were asked to read the autobiographies and check their findings for each category against a four point scale on the forms. The identities and classifications of the children who wrote the autobiographies were withheld. The judges did not know the identity, the ages and grades, or the school district of the children. They did not know whether the children were higher or lower achievers. They worked separately and did not know each other's results. Each autobiography was evaluated by three judges.

In some autobiographies there was not enough material present on which to base comprehensive judgments. In such cases scores were assigned only to those categories which seemed to be definite. After the judges had completed their evaluations, the results for each autobiography were added together and divided by the number of categories which were scored. Since there were four categories in each autobiography and each autobiography was scored by three judges, there were twelve scores to be reduced to one composite score. The composite score was determined by adding the twelve sub-scores together and dividing the sum by twelve. In cases where fewer than twelve sub-scores were available, the total number of sub-scores which were available were totaled and the sum was divided by the actual number of sub-scores available. By this procedure each child was assigned a single score.

The possible range of scores is from one to four, one being the highest score and four being the lowest score. Two children made scores of one, one in the ninth grade, the other in the sixth grade. The lowest score was 3.05, made by a tenth grade pupil.

In forty-two pairs the higher achiever had a higher score than the lower achiever with whom he was paired. In ten pairs the lower achiever had a higher score than the higher achiever with whom he was paired. In one pair both members of the pair received the same score. In four pairs out of five the high-achiever received a higher score than the low-achiever with whom he was paired.

There were some differences in autobiographical scores by communities, particularly in regard to the proportions in [illegible]ington, as against Bedford. What might account for this was not determined.

As in the other comparisons of this study, mean scores for the girls were computed and a t-test applied to determine if these means were significantly different statistically. The difference in mean autobiographical scores for higher and lower achieving boys was significant at the .05 level of confidence. The difference in means for higher and lower achieving girls was just short of statistical significance at the .05 level.

The word count showed an interesting distinction between the higher achievers and the lower achievers. The mean number of words written by higher achievers was 341. The mean number of words written by lower achievers was 250. Fourteen of the lower achievers wrote fewer than one hundred words. One wrote twenty-five words; another twenty-eight words. Only one of the higher achievers wrote fewer than one hundred words. Both sexes differed in mean number of words written in their autobiographies although the difference was more significant statistically between boys, higher and lower achievers, than between girls, higher and lower achievers.

No attempt will be made to show that the number of words in an autobiography is influenced by cultural values or self-concept.

Some points for consideration might be suggested. Poor physical coordination might deter a child from giving full expression in his written work. At the same time, it could be an influencing factor in his low achievement test scores. Poorly developed and inadequate skills in disciplined thinking and writing could be expected to limit the quality of the original writing. Upon considering all of the autobiographies, the writers are inclined to believe that the relative briefness of the autobiographies of the lower achievers may have resulted from an attitude of complacency. The general impression of the autobiography, in the writers' opinions, tends to convey the value system of the child who wrote it. Sketchy, unclear autobiographies may well come from children who do not seem eager to excel and who do not seem interested in success. On the other hand, well written, clear and more complete autobiographies may come from children who seem to be vigorous in their pursuit of high and difficult goals.

Interpretation

The material from the autobiographies of these highly intelligent children revealed differences between the higher and lower achievers. What children wrote about themselves in a somewhat structured autobiography indicated a generally higher level, for the higher as against the lower achievers, in the rated quality of their hobbies, their responsibilities, the persons with whom they identified themselves, and their educational and occupational aspirations. These differences were not uniformly the same, pair by pair, and there were lower achievers who gave a picture of their tastes, hopes, and aspirations that was of a higher level than that of some of the higher achievers. The higher achievers were typically more able and willing to write full and clear autobiographies than were the lower achievers.

The values held by the children, especially those related to educational attainment, were reflected in their autobiographies. Less clear, but nevertheless important, were the channels through which these values were acquired. It would appear that the persons who were mentioned as benefactors in the autobiographies stood in the role of advisors, models, and examples. They furnished support and security to the children. They gave validity and sanction to those attitudes and behaviors which the children adopt from them. They were provided rewards of companionship and love.

In general the self pictures of the higher achievers were such as to suggest that they were children whose out-of-school lives and interests tended to harmonize with and to support high achievement in school. It should be emphasized that each of these children is a unique individual. Only by assessing individually what is in "Sarah's" autobiography can the counselor, the teacher, the school psychologist fully utilize this valuable means of self-revelation. It should also be pointed out that there is no certainty that these children gave the research team a full picture, or even a fully accurate self-picture. Autobiographical data, in some instances, seem clearly out of harmony with evidence gathered by other means. This serves to underline a well-proven principle of child study: each child must be viewed from many angles and by several different means before our insights as to his nature become at all reliable.

HIGHER AND LOWER ACHIEVERS—OBSERVED CHARACTERISTICS

The data gathered regarding the fifty-five pairs of highly intelligent children were divided into two categories—that which they reported about themselves and that which trained observers reported about them. Here we turn to observed evidence regarding the social and economic position of their families, their closest friends, and what an interviewer learned by talking with their parents. These kinds of evidence do not lend themselves to the exact quantitative representation that warrants careful statistical analysis. Yet such data constitute some of the most important material educators need in trying to understand and work with the gifted child.

SOCIAL POSITION OF THE FAMILY

Sociologists have found class structure in great cities, crossroad communities, factories, service clubs, churches, and wherever people associate together. Similarity of occupations, education, and common descent tend to bring about similar modes of life in which people meet each other on equal terms and regard themselves as belonging to common groups.

The extensive studies of Warner, Kahl, Davis, Hollingshead, (49, 50, 51, 52, 23, 21) and others, indicate that Americans belong to a society stratified into levels. Each level is characterized by identifying forms of conduct, attitudes and beliefs. Not all families can be neatly assigned to particular levels. A family may exhibit characteristics of one level at one time and an adjacent level at another time. This is particularly true if the family is what sociologists call "socially mobile," moving from one level to another. It is true where the husband and wife have come from different social levels. Most families associate with others with whom they hold common loyalties, common beliefs, and share comparable economic conditions.

The customs, attitudes, and activities of these different segments of the American society have been extensively studied. There seems to be a quality running through each level which has important educational meaning. For example, the social elite have a self-confidence and sense of security which can only come with the inheritance of wealth and prestige from old and respected families. The children of these families seldom appear in the public schools. They are usually educated at private schools.

About ten per cent of the population consists of the families in the professional and managerial group. This group is composed of the doctors, lawyers, architects, teachers, and others of life education, and decision makers in business and industry. Their careers are the focal points of their lives. They seek success, honor, and prestige. In order to gain these ends they discipline themselves to work, to academic achievement and to constrained behavior. These values are imparted to their children. Their children, with some exceptions, are the high-achieving leaders in the public schools. They accept academic discipline and move into college, losing only ten to fifteen per cent of their numbers on the way. They tend to "drive to excel."

Some twenty-eight per cent of the population are the families of small businessmen, skilled workers, and group leaders in business and industry. They tend to be honest, reliable, respectable, and conforming, and to impart an air of both respectability and contentedness to their children. These are the children of whom we might say "satisfied to be average."

About forty per cent of the people belong to families of the semi-skilled workers. They are employed in jobs which require little training and seldom lead to promotion. Many of them have not completed high school. They tend to be somewhat hostile and defensive towards those above them. These attitudes tend to be imparted to their children. The sons realize early that they can drop out of school and go to work at near their father's wages. They can become independent and self-supporting in the manner to which their family is accustomed. They have grown up in a climate where academic success does not seem too important. These children are from the educators' point of view, "the uninterested."

About twenty per cent of the people in the American culture live from hand-to-mouth with minimum physical security. They tend to be somewhat undisciplined, unskilled, and erratic. They usually live in communities where their association is mainly with their kind. To hope that children who grow up under such influences would abandon all that is emotionally dear, and for them harmonious, to take on imposed, conflicting and strange new values is doubtful. The demands of society upon them are so opposed to the patterns within which they live and to which they hold loyalty that hostility and defiance among the young and apathy among the older is probable. A one word description of the children of this segment of our culture when confronted with the academic and behavior discipline school might well be the word "unfriendly."

The reader will recognize that the characterizations of the various American social class groups which have just been presented will need, when we look at the individual child, to be qualified. Certainly there will be, within any given cultural or social class group, families, and thus, children, who are different in attitude and aspiration from what more commonly comes from their particular class group. No school can accept a deterministic and complacent attitude toward this matter. Yet no school can do its best for its gifted children if it fails to recognize and to cope with, or capitalize upon, the attitudes, values, and aspirations which children bring with them and which tend to reflect their social class groups.

It is assumed in this study that it is important to examine the social and economic class position of the children being studied because it is assumed that these children may, in their school achievement, have reflected the values and attitudes of their families. A social position scale was used.

Warner (49-52), with a group of associates, developed a social scale for use in the studies of Newburyport, Massachusetts. This scale contained six factors. McCall modified it somewhat for making a study in Chicago. Hollingshead (21) has been using a similar scale containing three factors. A scale, similar to these mentioned, was selected. It is Packard's modification of some of these scales. (31) Packard's modification contains scales which together yield a composite score. It rates the areas of type of occupation, extent of formal education, the source of income, and the kind of home (living quarters). Each of the four scales has a seven point range. This scale, the *Packard Modification, Social Position Scale,* was used with the one hundred ten families included in the study. It yields values by which a family can be placed in one of *five levels.*

When the total range of social position in the American culture is divided into five levels, each level will necessarily be quite broad. The actual elements which interact to make social position evident are so numerous, so varied, and so fluid that further refinement of this social position scale would seem to be artificial and unrealistic.

The Packard scale was applied to the families of the students involved in the study. One family was found to fall in the top level of the five social divisions. Thirty-five families were in the second level; thirty-three families in the third level; thirty-six families in the fourth level; and five families in the fifth level. The family which scored in the top level stood at the lowest point in that level; hence its position in the top level was at the greatest possible distance from the mean or center of the level and probably should not be considered to be typical of the families who are usually thought of as the "elite." A similar situation existed in the lowest level. The five families whose scores fell in the lowest level fell at the extreme upper limit of that level. They probably should not be considered to be typical of the lowest social level.

There were noticeable differences in social position ranks among the five communities. Bedford and Salem were quite similar, but Nelsonville had no children from level III and the highest proportion from levels IV and V. Logan had no children from level V. Worthington's children came, generally speaking, from a social position distribution most markedly above the average of the total 110 children.

Were the higher achievers in each pair found to be in higher social position levels than the lower achievers? It was found that the higher and the lower achiever in each pair were most apt to come from the same social position level. Of those not from the same level, the higher achiever was most apt to come from the higher position level, except in Worthington and Salem.

The distributions of levels for all 55 higher achievers were compared with the distributions for the lower achievers and for the national class distribution. It was found that the distributions of social position of both the higher achievers and the lower achievers differed from that of the national "norms." These national figures have been given both in percentages and in numbers in relation to the total of 55 in this study. Chi squares were run comparing the higher achievers and the lower achievers with the national distribution, and comparing higher and lower achievers' distributions. It is interesting to note that both of the distributions (higher and lower) of the present study differed significanty from that of the social position of the general population. While not so great a difference, the distributions for the higher and lower achievers also differed beyond chance expectation.

To provide a comparison of the boys and the girls, the social position levels of these two groups were also compared. The actual scores on the Packard Scale for boys and girls were also compared and t-tests run as to significance of differences between higher and lower achievers.

To determine if the children in this study tended to report facts about their home and family status which were generally similar to what the observers saw, the *Sims Score Card of Socio-Economic Status,* Hieronymus' revision, was administered to all 110 children. This score card is Sims' device which has been used so much for years, but brought somewhat up-to-date.

The mean scores and t tests for the Sims were calculated and it was found that, as regards the 55 pairs, the children reported regarding their families in such a way as to verify the same kind of socio-economic distinctions between the higher and lower achievers' families as came from observers' ratings on the *Packard Social Position Scale.* The unique fact of this table, as against the earlier analysis of the Packard scale results, is that sex is differentiated. Significant differences in means were obtained for both sexes and, as in other comparisons, the boys differed somewhat more than the girls.

Interpretation

The *Packard Revision, Social Position Scale,* when applied to the 55 pairs of children in this study, showed that their families were classed predominantly in levels II, III, and IV—the professional, the small business and skilled, the semi-skilled. Only one child came from an elite level I home and only five came from an unskilled level V home. Differences between higher and lower achievers were most commonly in the direction of the higher achiever coming from a higher social position level home. This was also verified by the childrens' scores on the Hieronymus Revision of the *Sims Score Card of Socio-Economic Status.* Significant differences were found, on the average, between higher and lower achievers on both scales, the differences favoring the higher achievers, especially among the boys.

Two lines of interpretation suggest themselves:

First, there is the inescapable fact of difference in social position and socio-economic level of these two groups of bright children. In every case, both members of each pair were in the same school system and, with only four exceptions, in the same building. Usually both members of each pair were taught by the same teachers. It is well understood that teachers can exhibit different attitudes toward different pupils and that other variables within the same school can affect children differently. Nevertheless, a difference in the lives of the children in this study was found in the differences of social levels of their families.

This study will not presume to show how cultural values are transmitted from parents to children. One needs only to review the findings of anthropologists, social psychologists, and others to learn that transmission of parental beliefs, attitudes, and customs to children is natural and customary. A cursory view of the tendency of children to hold to the religious preferences of their parents should serve to illustrate this fact.

Social level tends to correspond to the nature of school achievement in the high ability children in this study. Cultural values are transmitted by parents to children. This would seem to indicate that the cultural values which are concomitant with social level also influenced the tested achievement of these children.

Second, it is always necessary to point to the exceptions and to emphasize the individual uniqueness of every child. Some lower achievers came from homes of high economic and social advantage. The fact that these children were, in tested achievement, not performing in the manner equal to some children from much less privileged homes needs the most careful attention. Home "advantages" do not necessarily guarantee high achievement. Nor do home "disadvantages" necessarily guarantee low achievement. What is clear is that, while children from the higher level homes enjoy certain cultural advantages which tend to contribute to school achievement, variables which negate advantages may well operate in the complex life of any child.

The school that is to provide the best possible learning opportunities for all children must keep carefully attuned to the home values and the home aspirations of its children. The school that is to do its best for its intellectually gifted children cannot assume that a very high I. Q. will, in and of itself, guarantee that a child will necessarily achieve as well as he could achieve. Personal and family factors seemingly exercise a dynamic role in determining level of achievement.

PEER ASSOCIATIONS

Children study together in the schoolroom. They are often seated alphabetically, by heights, or by chance. They usually work at the blackboard in the same arrangement in which they are seated. They learn from the same sets of books. They answer the same questions. They receive the same assignments and they listen to the same lesson discussions. They are a unit. Yet, they are individuals. They do not react to classroom situations in the same way. They do not feel the same interests in school work, and they do not hold the same intensity for common loyalties.

Their differences become dramatically portrayed when they leave school at the close of the day. A few wander toward home alone. Some leave in twos. Others join in larger groups. These groups, large or small, do not form by chance. Social forces operate to bring persons into groups. Common life experiences, common cultural customs, common attitudes, and common beliefs are some of the conditions which bring people into associations where they can interact freely and comfortably. When the members of a group develop a common spirit, a point of social reference, which separates their group from casual associations or from other groups, their group tends to become a clique. Warner (50) describes a clique as an "intimate nonkin group." For information on the subject of cliques the reader is directed to the works of Warner, Hollingshead, (21) Allport, (2) and others in the fields of sociology and social psychology.

Though cliques seldom have formal rules, the members have strong feelings for unity. They usually think of others as outsiders. They tend to conform to common patterns of behavior, hold common attitudes and beliefs, and tend to strive toward common or similar goals. They find acceptance and security for their behavior and views in the clique. Within the clique their behavior, attitudes, and beliefs are given reinforcement. Common interests bring people together, and their interaction will eventually produce common values. Hollingshead (21) has shown in his Elmtown study that school children usually form cliques with those of the same social class level. Class level is determined in part by cultural values. Cultural values are inherent in attitudes, beliefs, social habits and customs. Hence, we may expect children of comparable ability and comparable cultural backgrounds to find companionship in small intimate groups.

Kahl says, "On the average, students separate themselves into cliques that are relatively homogeneous in their prestige class composition." (23) Stouffer found in his study of 3348 boys from the top I. Q. score quintile in the Boston area that, "Boys tended to shift their peer-group affiliations to match their school aspirations. If one kept his schoolwork up while his neighborhood friends did not, he shifted into another peer group with higher ambitions." (42)

Social level attitudes may, among other factors, bring children into social interaction, and this social interaction will probably reinforce and strengthen these attitudes. Some of these attitudes inevitably embrace orientations toward academic achievement.

This section of the study is concerned with the attitudes toward academic achievement which are subject to reinforcement by peer interaction. Each of the social levels which are generally represented in the public schools seems to embrace characteristic attitudes toward education. A procedure was developed to examine the operation of these attitudes in peer association and clique formation.

Each of the one hundred ten children in the study was asked to name his three best friends. There were very few duplications of names. Hence, there were more than four hundred children in the peer evaluation. After the names were collected, they were separated and grouped by schools. Twenty-four schools in the five cities of the study were represented. The names of the children in the original study with the names of the children who were indicated as best friends were arranged in alphabetical lists, a seprate list for each school.

Copies of these lists were then presented to principals and teachers who, in the opinion of the investigators, had intimate knowledge of the work habits, achievement records, attitudes, and aspirations of the children who were named on the lists. The lists were arranged alphabetically to negate any tendency by the judges, principals, and teachers, to make ratings by association. Separate copies of each list were given to the judges. By working with separate copies the judges usually did not know how other judges evaluated the children whose names were on the lists. This precaution was taken to prevent judges from influencing each other in making their evaluations.

When the judges were given the lists of names of the children to be evaluated, they were also given cards with the following directions:

PEER RATING

You will be shown a list of names of pupils who attend the local schools. Please indicate one of the following classifications for each pupil:

1. Drives to excel in his studies.
2. Cooperative but contented to be "average."
3. Uninterested in school.
4. Hostile toward teachers, school regulations and the purposes of education.

The judges were told to place the appropriate numbers before the names of the children with whom they were acquainted, one number for each child.

A chart was then developed on which was recorded the peer relationships and the evaluations of the judges. The name of each higher achiever was placed opposite the name of the lower achiever with whom he was paired. Next, the names of the three best friends were placed with the name of the child who had mentioned them. The judges' evaluations which were represented by the numbers on the PEER RATING card and which were used as an "academic achievement attitude scale" were then placed with the appropriate names. The highest rating was 1, the lowest 4.

A serious attempt was made to get three ratings for each best friend. This was not always possible. In a few cases a child whose name was on a peer list was known only to one or two teachers in the school which he attended. In a few cases best friends were indicated who did not live in the same school district with the child who indicated them. No ratings were obtained for those children. Many children received more than three ratings.

The numbers which represented the ratings for each child were added together. The sum of the ratings was then divided by the number of ratings. In other words, an average rating was obtained from the several ratings made by the different judges. Hence, each child who had been indicated as a best friend received one composite rating, or "score." Though the names of the original children in the study (the higher and lower achievers who made up the pairs) were included in the alphabetical lists, the ratings for these children were not used in the peer study. Their names were included in the lists which were given to the judges to confuse any patterns of peer associations which might tend to influence the judges' ratings.

The next step in the procedure was to reduce the derived scores of the best friends to one composite score representing all the ratings made by the judges for the best friends of each higher and lower achiever in the study. Thus, a single score indicates the level of the composite attitudes toward academic achievement of the peers of each higher and lower achiever in the study.

The data for four of the pairs of higher and lower achievers were incomplete, hence these four pairs were not included in the analysis of results. Among the fifty-one pairs for which the data were complete were thirty-two pairs in which the higher achievers had better scores than the lower achievers with whom they were paired.

The peer rating scores of sixty-three per cent of the higher achievers were higher than those of the lower achievers with whom they were paired. Thirty-three per cent of the lower achievers received higher peer ratings than the higher achievers with whom they were paired.

There were some differences in relative peer ratings from community to community. The Bedford higher achievers' peers' ratings were more consistently higher than the lower achievers' peers' ratings than was true in Worthington or Salem. In fact, the relationship was almost completely the reverse in Salem.

When the peer rating scores of the secondary school students were separated from the scores of the elementary school children, quite a trend appeared in the data. In seventeen pairs of these twenty-one pairs, the higher achievers received better peer rating scores than the lower achievers with whom they were paired. The ratio for higher achievers receiving better peer scores than lower achievers in the pairs at the secondary level was four to one.

There were thirty pairs in grades four through six. In fifteen of these pairs the higher achievers received better peer rating scores than the lower achievers. In thirteen pairs the lower achievers received better peer scores than the higher achievers The ratio for the higher achievers receiving better peer scores than the lower achievers among the elementary children was approximately one to one.

Probably the choice of friends based on social level and cultural values increases in importance with increase in age. As they grow older, children become increasingly sensitive to differences in social customs and attitudes. According to Hollingshead, this social sensitiveness leads young people to seek companionship among other young people with whom their values, beliefs, and aspirations are readily accepted and approved. If these observations are generally true, young children probably do not so commonly cultivate friendship on the basis of cultural values as do older children.

Interpretation

This study did not examine the backgrounds or the mental abilities of the best friends who were indicated by the higher and lower achievers. It studied only their attitudes toward academic endeavor as measured by teacher judgment. The results do not indicate whether a common attitude toward academic achievement brought these children together, or whether the common academic attitude evolved from the interaction of children who were brought together by other common interests.

The results of this study indicate that the higher achievers who were above the sixth grade in school, in seventeen cases out of twenty-one tended to have their best intimate associations with children who "drive to excel in their studies." The lower achievers in this study who are above the sixth grade in school tended to have their most intimate associations with children who are either "contented to be average" or "uninterested in school." The higher and lower achievers in this study who were in grades four, five, and six did not show preferences which could be measured by the peer rating device that was used.

The attitudes, values, and aspirations of the higher achieving bright children would, most commonly, be reinforced by their best friends so as to encourage high achievement. The lower achievers would more commonly get less encouragement toward high achievement from their best friends. Achievement commensurate with ability—the goal of all good schools—can be expected from highly intelligent children only if these children regard high achievement as desirable and acceptable. The attitudes of their close friends will be involved and must be considered by the school as important elements in the motivational context of each bright child.

PARENT INTERVIEWS

Procedure

The procedure for each of the one hundred ten parent interviews of this study was the same. The parents of each subject were contacted by someone from the child's school, usually the building principal. The study was explained in each call and the parent was asked if he were willing to cooperate. The parent, if he were cooperating, was informed that the interviewer, whose name was given to him, would call in the near future to arrange a time to meet with the parent.

Most of the interviews took place in the home with the subject's mother. A few were in the evening at the local school and in these cases both father and mother were usually present. One parent refused to permit the interview to be in the home. This mother, willing to cooperate, came to the school for the interview.

An interview schedule was used. Thus the interviewer was able to elicit certain common information from all homes and to achieve more uniform impressions. These various facts and impressions are summarized on the following pages.

Interview Findings

The fathers of the higher achieving group of students in this study tended to be a little older than those of the lower achieving group. Sixty-two per cent of the fathers of the higher group were over forty years of age while fifty per cent of the fathers of the lower group were over forty years of age.

The mothers in both groups tended to be younger than the fathers. In the higher group forty-five per cent of the mothers were over forty years of age compared with thirty-three per cent of the mothers of the lower group who were over forty years of age.

The formal educational background of the parents was higher for the higher achieving group than for the lower group. Sixty-two per cent of the fathers of the higher achievers had some formal education beyond high school while forty-seven per cent of the fathers of the lower achievers had some formal education beyond high school. Fewer mothers in either group had formal education beyond high school than did the fathers, but a larger percentage of the mothers of the higher group had education beyond high school than did the mothers of the lower group.

Twenty-six per cent of the higher achievers' and fifteen per cent of the lower achievers' fathers could be classified as working in professional occupations. The remaining portions of both groups were largely employed in managerial and skilled labor occupations.

The majority of the subjects in both groups came from families of three or fewer children. Thirty-seven per cent of the lower achievers came from families of more than three children. Twenty-two per cent of the higher achievers came from families of more than three children.

The interests, hobbies, and community activities of both fathers and mothers varied greatly. Almost all had many interests. Hobbies and community activities seemed to differ most in the nature of the activity. The family of one child of the lower group lived nearly in isolation. They preferred as little contact as possible with anyone outside the family unit. It was even difficult for the interviewer to arrange to see this family because the father felt the best way to avoid trouble was to have no contacts. The mothers and fathers of the higher achievers tended to participate in more community and civic groups than did those of the lower achievers. The mothers of the higher group showed the greatest amount of participation in community groups and the mothers of both groups were more active than the fathers of the respective group. Approximately sixty per cent of the higher achievers' mothers and forty-two per cent of the lower achievers' mothers were active in community groups. For the fathers forty-nine per cent of the higher group and thirty-six per cent of the lower group were active in community affairs. The interests, hobbies and community activities of this generation of mothers and fathers for both groups showed great differences when compared with those of their fathers and mothers. The grandparents of the study group were much less active outside of the home and had fewer hobbies and interests. The activities of the grandparents were mostly family centered.

Most parents of both groups reported that their children were easy to control or discipline in the home situation. Most could control the child by talking with him. The punishment most frequently used was restriction or loss of privileges. Parents of twenty per cent of the higher achievers and sixteen per cent of the lower achievers reported difficulties in the control and discipline of their child in the home.

Parents of both groups varied greatly in their attitude toward and handling of allowances and spending money for their children. Parents of eighteen per cent of the higher achievers and twenty-four per cent of the lower group reported their child earned all or most of his allowance or spending money. Many of the remaining eighty-two and seventy-six per cent respectively gave money to the child as he needed or requested it. A few gave the child a set amount to do with as he wished, while others dictated a strict budget of the entire amount given to the child.

Home responsibilities were assigned and carried out by seventy per cent of the higher achievers and sixty-four per cent of the lower achievers. The other thirty and thirty-six per cent of the groups had no home responsibilities. A few parents did not believe in children having responsibilities around the home and a few reported that they were unable to get the child to do any tasks for them.

Most of the children in this study had interests, hobbies, and activities during out-of-school hours. These out-of-school interests and activities varied from activities and interests in which the child worked alone to those involving group activities outside the home. Reading was mentioned very often and usually was a stronger interest in the higher group than in the lower group. Sixty-seven per cent of the higher group and fifty-five percent of the lower group indicated wide interests and activities in which they were involved with others in the community during the out-of-school hours.

Approximately twenty-five per cent of each group had relatives, other than those who were members of the immediate family unit, living in the home. Problems within the home involving relationships with relatives living there were fairly common in these situations. The most serious of these problems seemed to involve members of the lower achiever group.

Sibling relationships did not indicate many real problems in either group. The most serious problem among siblings was that of a lower achiever and his half brothers.

Most parents of both groups indicated that their child was not easily pushed around by his peers or neighborhood playmates. Many in both groups were characterized as being leaders.

Family problems seemed to occur more frequently in the lower achiever group than in the higher. The type of problem varied: mother-son difficulties, father-son difficulties, mother-daughter difficulties, and grandparent-child difficulties. A few had difficulties between the parents, but few reported having received professional help with any of their problems.

The parents of eighteen per cent of the higher achievers and forty-seven per cent of the lower achievers reported their child had experienced some difficulties in school, with many of these having been considered serious enough for parent-teacher conferences.

Most of the parents of both groups expressed positive feelings regarding their child and accepted him realistically as he is. Some feelings of rejection of the child were expressed by five per cent of the higher group and by thirteen per cent of the lower group parents.

More than one-half of the parents of each group stated definite, positive and realistic goals which they held for their child. Thirty-one per cent of the higher group and forty-five per cent of the lower group had indefinite, unrealistically low, or no, goals for their child.

Slightly over one-half of all the families contacted in this study expressed positive and complimentary feelings regarding education and their schools. Dissatisfaction or negative feelings regarding the schools were expressed by thirty-eight per cent of the higher group and fifty-five per cent of the lower group parents. Much of the dissatisfaction could be described as constructive criticism. The strongest negative feeling regarding American education in general was expressed by the one family in the study who were not citizens of the United States.

The parents were cooperative in giving information needed by the interviewer; but one expressed strong objections to participating. About five per cent of the entire study group had some reservations about the interview prior to its taking place. Approximately ten per cent of the higher group parents and thirteen per cent of the lower group parents were somewhat indifferent to the idea of the study being done but were willing to cooperate as long as it was sponsored by the schools. Several parents in both study groups expressed feelings against research studies in general and especially any not directly sponsored by schools. It was pointed out by some that the type questions asked, as well as the competence of the interviewer, had made a difference to them in the information that they were willing to give. The most general concern was that the information be confidential.

The parents seemed to enjoy talking about their child and some expressed the feeling that they were glad to have someone listen to them. A few had been concerned prior to the interview that the questioning might be what they referred to as "too personal" and one father felt that a person with less than a college education might feel inferior when asked about his educational background.

Interpretation

Evidence from the parent interviews indicated that factors usually considered most favorable for maximal learning experiences do tend to occur somewhat more frequently among the higher achievers than among the lower group. The same factors occurred with sufficient frequency in the lower achiever group to prevent any factor from being regarded as contributing substantially to differences in achievement in the learning situation. It appears that factors contributing to differences in achievement must be regarded along with other factors in the individual child's experience. To successfully attack the problem of lower achievement in gifted children, it will be necessary to study the individual child and the factors which affect him individually.

Through parent interviews or conferences, as well as through parental responses to questionnaires, valuable information can be collected. Many traits often characteristic of the gifted child may be observed by parents. The child's early walking and talking, play, hobbies, understandings, getting along with others, vocabulary, interests, playmates, reading habits, and many others may be observed by the parent. No one is closer to children than their parents, but herein lies both the strength and the weakness of their evaluations. Because of their closeness, parents may not realize the true ability of their child. They may think all children behave and develop in the same way.

In studying child behavior, it has become increasingly evident that a child is influenced by experiences outside of the school as well as by those in the school. His out-of-school experiences may supplement or complement his school experiences. His out-of-school experiences may act to neutralize or even to negate the effects of the experiences in school.

Information learned directly from parents in an interview is often of a nature that may not be known or comprehended by the child. It is information that is normally not included in pupil records and not reported by parents in personal data questionnaires. This information may help greatly to understand the child and his behavior in the learning situation of the school. His achievement may be hindered by problems outside the school situation. Sometimes these problems are not recognized by students and parents as factors which may be interferring with his most effective use of the school. The school cannot necessarily help to alleviate the problem, but knowing of its existence will help to understand the child and to be alerted to realistic expectations of the child. Changes in a home situation may bring about changes in the behavior and reactions of the child in the school situation. Changes in the out-of-school situation are often learned only by talking directly with the parent. A friendly, permissive, and accepting atmosphere is necessary in the parent interview if the parent is to feel free to respond easily and honestly.

In any studies involving the underachievement of gifted children, it is important to interview the child's parent to gain additional and supplementary information as well as to verify information from other sources. A study lacking this information would be incomplete. One would not have included factors which could easily influence achievement and each child's case history would lack an area that could contain the contributing factors. A judgment made without the information which did contain the contributing factor or factors would be in error. The information regarding each child must be complete if it is to be useful. To be complete it must include an interview with the child's parents.

SUMMARY AND RECOMMENDATIONS

This study of fifty-five pairs of highly intelligent boys and girls was made to identify factors which might be associated with significant differences in school achievement as tested by standardized test batteries of basic learnings. The factors examined were labeled "family and personal dynamics" because the emphasis was to be upon the student as a person and as a member of a family.

The students selected were identified in five Ohio school systems by an analysis of school records and by individual intelligence testing and achievement testing. Each child in the group of 55 pairs had an I. Q. score of 130 or over on an individual intelligence test. Each pair was of the same sex, school grade, and with few exceptions, school. In each pair was a "higher" and a "lower" achiever, the difference being grade placement scores of at least one standard deviation apart on the achievement battery. The result of these selection methods, from grades four through ten, resulted in 33 pairs in grades 4-6 and 22 pairs in grade 7-10. There were 35 pairs of boys and 20 pairs of girls. These groups differed significantly in achievement as tested but did not differ significantly in intelligence quotient.

A directing "research team" studied many methods of investigation and ended up using six procedures which involved self-reporting by the subjects and three devices which involved observation and analysis of the child's friends and his home. Details regarding these devices need not be repeated here. Let it be said, however, that one purpose of the study was to evaluate the usefulness of such procedures. Some were used which have not been commonly employed in order to test their practical value in school programs.

MAJOR FINDINGS

1. Personality assessments, as made by the use of the *California Test of Personality* revealed that the lower achievers differed significantly* on the "total adjustment" scores of the test; this being true of boys and girls. As to the part scores of this test, both boys and girls differed significantly when higher and lower

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*As used in this report "significantly" refers to statistical significance, differences shown by statistical analysis not to be due to chance.

achievers were compared as to their "family relations" and their "school relations" scores. Boys differed from each other — higher and lower achievers — more than girls and on more aspects of this test.

2. On the *Gough Adjective Check List,* an instrument inviting reactions indicative of the self concept, the higher and lower achieving boys differed from each other more than did the girls. Higher achieving boys tended to be the more self-accepting, self-assured, flexible, and have higher morale. Higher achieving girls differed from lower achieving girls in most feelings of self-assurance and responsibility.
3. On the *What I Think* inventory the higher achieving boys, as compared with the lower achieving boys, showed greater satisfaction with school and with their achievement, and a greater degree of acceptance and satisfaction on the part of their parents toward their goals and their achievement. The girls differed less than the boys on this inventory, revealing that the higher achievers seemed to have a greater sense of confidence in their academic ability and that their parents were better satisfied with their effort and achievement. In general, there were very few differences of attitude between the mother and the father of the same child, at least as seen by the child. Their parents were seen, by most of the 110 children, as eager for them to achieve well and to choose significant life goals.
4. *The Occupational Interest Inventory,* level of interest section, showed higher and lower achieving boys to differ more than higher and lower achieving girls. Higher achieving boys tended to have higher occupational interest levels than lower achieving boys. This difference was not obtained for the girls.
5. Attitudes of acceptance toward persons of various occupational and educational levels were shown by an adaptation of the *Bogardus Social Distance Scale* not to differ significantly as between higher and lower achieving bright children in this study. This was due in large part to the generally high level of acceptance on the part of most of the children.
6. The picture of himself written in the autobiography revealed much regarding the bright child in this study. In general, the higher achievers revealed a higher level of hobbies, of responsibilities, of educational-occupational aspirations, and of persons with whom they identified. The higher achievers were seemingly willing to write more about themselves than were the lower achievers. These differences were not uniform. The autobio-

graphies, had these children been described case by case, would provide some of the most interesting and revealing data gathered about them.

7. When the family's social position was assessed by means of Packard's modification of the Kahl and Davis social position scale, differences between higher and lower achievers were greater in some communities than in others. In general, both on the Packard scale and on the Hieronymus revision of the Sims scale, the higher achievers tended to come from the homes of greater social and economic advantage. There were exceptions to this general finding, and these 110 families, as a group, tended to stand higher in both social position and economic rank than the national distribution.

8. The best friends of these children were identified by them and then rated by teachers and principals as to their attitudes toward education. In general, the higher achievers had best friends who were rated as holding attitudes toward education and school achievement that would encourage their drive to excel. This difference was appreciable above the sixth grade, but not sizeable in grades four through six.

9. When the parents of these gifted children were interviewed, usually in the home, they typically showed not only willingness, but often eagerness to talk about their children. The findings of the parental interviews showed some differences between parents of higher and lower achievers, but, in general, parental interview material is of greatest use in the study of the individual child. Parents of the higher achievers tended to be slightly older, somewhat more active in the community, slightly better educated, and somewhat better satisfied with their school than parents of the lower achievers.

CONCLUSIONS AND RECOMMENDATIONS

Identification and Study of the Gifted

This study has shown, in five school systems in the upper grades and junior high school, that there were very bright children who differed significantly in tested school achievement. While few of the lower achievers actually tested below their grade level, all fifty-five used in this study were "underachievers" in terms of their intellectual potential for achievement. Perhaps the most important implication of this finding is the danger of overlooking the bright child who is actually underachieving by standardized test standards. Clearly, such children must be identified and efforts made to help them achieve at a level commensurate with their ability.

This study has tested several methods of studying the gifted with particular concern for those methods which might be used in schools to sharpen our insights into the needs of the lower achievers. In general, the following recommendations would seem warranted by the experiences of this research team:

1. Personality variables certainly seem to be related to level of achievement. The use of such a personality test as that used in this study, properly combined with the other procedures, would seem to be both feasible and profitable. The child's concept of himself, while individually highly variable, needs to be a central focus of concern in dealing with gifted children. Any school staff seeking better understanding of childrens' self-concepts may well depend upon personal counseling interviews, teacher observation, parental interviews, anecdotal records, small group discussions, and the like to gain these insights. Such devices as the adjective check list and our W. I. T. inventory also threw substantial light on the needs of individual children.
2. Early orientation regarding the world of work and one's ultimate place in it has been shown by many studies to be an important area of learning for children as an aid to sensible life planning and to the utilization of career interests and aspirations as motivational forces toward good school achievement. The occupational interest level test used in this study and the W. I. T. inventory suggest the usefulness of such devices to identify children with low aspirational goals and as an aid to instructional efforts at further exploration of one's goals and ambitions. The point is that methods must be employed in schools which both identify children's educational and career goals and also provide interesting and stimulating bases for learning experiences related to life planning.
3. The device used in this study to explore social attitudes, the social distance scale, did not reveal significant differences between higher and lower achieving bright children. Apparently this device's usefulness with such children would be chiefly as an instructional aid to motivation and discussion.
4. The autobiography, as used in this study, revealed some of the most useful and interesting information about these bright children. Even a quantitative method of scoring autobiographical information has been shown to be possible. This type of self-picture procedure would seem to us to be an invaluable aid to

better understanding, to counseling, and to teaching the gifted and other children.

5. The three devices used for studying the social position and family situations of these children proved to be useful in identifying differences between the achievement level groups and promising as aids to understanding the needs of bright children. Certainly careful assessment of the potential cultural stimulation the child may be expected to receive as indicated by his family's socio-economic position would seem to be essential in programs designed to provide maximum encouragement to gifted children. The identification and study of his friends' attitudes toward achievement have been shown in this study to be contributory to better understanding of the bright child's own achievement. The personal contacts involved in interviewing parents in their homes have been shown to be highly productive of useful information and understandings.

In general, the procedural explorations of this study have been productive. No one school may wish to utilize all the methods of study employed in this investigation. But certainly this study has shown that a variety of data-gathering procedures tends to reveal a variety of important information. It should be emphasized, as it has been throughout this report, that great care must be taken in collating and synthesizing information gained from such a variety of sources. The data of this study could not be reported in case form in this document, but in the folder of each of the 110 children studied may be found a wealth of useful information. Were this employed by the teacher, counselor, or school psychologist in the given child's school, a better understanding of that child would seem to be inevitable.

Key Variables in the Achievement of the Gifted

The reader is aware that this study did not purport to draw a complete picture of the differences between higher and lower achievers among gifted children. The sample was limited, the procedures selective, the reporting of data largely by groups. Several clues to significant differences — *in general* — between the higher and lower achievers of this study were revealed. The "in general" has been stressed because case analyses were not possible in the scope of this study. It should be emphasized and re-emphasized that every one of these 110 children is a unique individual. Each pair is unique. No program keyed to the special needs of the gifted can operate entirely on "general" characteristics of the gifted. On every variable studied the higher and lower achieving groups overlapped significantly.

With this caution and limitation in mind, what are the implications for school practice of the findings of this study?

1. Programs for the identification and education of children of high intellectual ability must be properly geared to the unique individuality of each such child.
2. Programs for the education of the gifted must be properly sensitive to differences between boys and girls. Throughout this study, especially in such matters as personality assessments, self-concepts, attitudes toward educational achievement, the attitudes of their best friends, the higher achieving boys differed consistently more and in more ways from the lower achieving boys than was true of the girls. Apparently the personal and cultural forces impinging upon boys tended to produce sharper differences than among the girls. In schools it would appear that efforts to help bright boys toward higher levels of achievement will need to give special attention to those boys who score lower on personality assessments, reveal lower levels of educational and occupational expectation, have best friends who are not keen about high achievement, come from homes in the lower-than-school-average socio-economic categories, and have parents who are less well satisfied with their boy's school experience than the school's average parents. This is not to say that there are no bright girls with similar needs; but the chances of a boy needing such special attention seem more common.
3. As revealed by autobiographical sketches, by reactions to various inventories, by assessment of home backgrounds, and the like, it would appear that the school must early and persistently seek to enrich the cultural experiences and excite the intellectual talents of some gifted children beyond the efforts normally regarded as needed by such children. The lower achievers in this study showed themselves, in a variety of ways, to be working under the stimulus of lower aspirations, less self-assurance, less cultural impetus, and fewer home advantages than the higher achievers. If such "handicaps" are to be properly met and compensated, the early identification of such potential "lower achievers" would seem necessary. Early, persistent efforts to enrich their educational experiences, to work cooperatively and sympathetically with their parents, and to encourage them to feelings of belonging and self-confidence would seem imperative. Certainly this study has emphasized that what accounts for achievement in school among bright children lies, in no small measure, in the home and social context within which the child

grows outside the school. Without seeming to pass judgment on this home and social context, skillful and understanding efforts will be required to help the child achieve above the normal expectations of children from such backgrounds.

4. There is every indication from the experiences of the research team and the cooperating school personnel in this and other studies that schools need more adequate staffing for the careful study and understanding of their children. This study has shown that a variety of investigative procedures yields a rich body of personal data regarding a child. These procedures take a great deal of time to employ. Even more important, the proper collation and interpretation of these data is a highly individualized and demanding process, involving one child at a time. The proper use of such interpretations requires consultation among teachers, parents, and children under the leadership of skilled school psychologists and counselors. Adequate staffing for these individual studies and for the necessary subsequent counseling and consultation is one of the essentials if our gifted children — not to mention all the other children — are to be adequately helped to their highest achievement.
5. There are certainly some implications, from this and other studies of the gifted children, bearing upon the work of the classroom. It is in the classroom, under the direction of the teacher, that much is done that brings about the kinds and levels of achievement we seek for our gifted children. All that has been said so far in this study will have its fullest effect only if the classroom teacher is an intimate and enthusiastic member of the team studying, counseling, and educating the gifted child. All special study methods used, in a given school, should be thoroughly reviewed and understood by the teachers. In fact, many approaches to better understanding of the gifted must depend upon teacher involvement and understanding. The procedures utilized in this study are not something that specialists are going to employ without regard to teachers, their concerns, their understandings, and their ultimate use of the results.
6. Finally, a word about the children themselves as objects of our study and concern. It is our conviction that children must be less the *objects* of our study and more *partners* in a developmental process of self-study and growth in self-understanding. The research team had some of their finest experiences in working with small groups of bright children during the try-out and discussion of the procedures. They found these children to be excited by, and keenly interested in, these self-analytical pro-

cedures. Their judgments regarding various instruments and their meanings were excellent. Others who have worked with the gifted have had the same experience. Thus we would like to close with a strong recommendation that we begin to work early with bright children on the basis of a partnership in the exciting process of coming to a better understanding of ourselves.

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THE FREQUENCY OF ACADEMIC UNDERACHIEVEMENT AMONG FOURTH AND SEVENTH GRADE STUDENTS IN OHIO WHO DISPLAY HIGH SCHOLASTIC APTITUDE*

Henry Dizney

Kent State University

This project was undertaken because of an interest on the part of the Division of Special Education, State Department of Education in the incidence and degree of underachievement among gifted children in the State of Ohio. No general estimates of underachievement were known to exist for elementary school populations. It was felt that such information was essential to the Division's responsibilities related to educational programming and research activity.

The specific objectives of the project were stated as a series of seven questions. These questions were:

1. What is the estimated incidence of underachievement in the indicated groups for the State of Ohio?
2. Are there significant differences among three categories of school district size with respect to both incidence and degree of underachievement?
3. Is there a significant difference between two categories of educational expenditure with respect to both incidence and degree of underachievement?
4. Are there significant differences among specific academic skills with respect to both incidence and degree of underachievement?
5. Is there a significant difference between upper and lower (4th vs. 7th) grades with respect to incidence of underachievement?
6. Is there a significant difference between two levels of academic aptitude (I. Q. scores 116-131 vs. I. Q. scores 132 and up) with respect to incidence of underachievement?
7. Is there a significant relationship between degree of scholastic aptitude and degree of underachievement?

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*This is an abstract of Dr. Dizney's complete report. Those readers who want the technical data may secure a copy of the complete report from the Division of Special Education.

Underachievement was defined as disparate test behavior on group achievement and intelligence tests as observed from the *California Achievement Test* and the *Calfornia Test of Mental Maturity.* The difference between obtained grade placement in achievement and anticipated achievement grade placement scores were utilized as the criterion scores for classification and analysis.

The anticipated achievement score, unique to the California batteries, is based upon multiple norming procedures which take account of grade level, chronological and mental ages. It presumably provides a standard of expected achievement for varying levels of mental ability.

A difference between obtained and anticipated grade placement scores which reached or exceeded —1.65 standard errors for the difference between such scores was used as the critical difference for identifying underachievers. This criterion presumably identified by chance five per cent of the sample as underachievers.

Two educational levels, fourth and seventh grades, were sampled in the project. A sampling plan was evolved which was based upon enumerative data for Ohio public school systems available from the Division of Research, State Department of Education, Columbus, Ohio. Utilizing this plan, the sample was considered to be stratified on six cost-size categories. These categories were defined by the rank ordering of all school systems for per pupil cost and average daily membership and resulted in a classification of large, medium and small systems for high and low cost categories.

Invitational letters were sent on a random basis to the administrative heads of school systems in each of the six indicated categories. Final selection for participation in the project depended upon their willingness to participate. Descriptive analyses of the strata in the final sample indicated that the sample overestimated cost for the high cost category and underestimated the size of small school districts. The final sample consisted of 64 classrooms from 42 school districts for each of two grade levels (fourth and seventh). There were 1,819 fourth graders and 1,949 seventh graders in the final sample, for whom complete data were available.

What Is the Estimated Incidence of Underachievement in the Indicated Groups of the State of Ohio?

By utilizing procedures appropriate to stratified sampling, 95 per cent confidence intervals were obtained for the estimated proportion of underachievement for both grade levels for children with obtained I. Q. scores of 116 and up. Those intervals were .1389; .2017 and .1033; .1621 respectively. The best point estimates available for the proportion of underachievers among gifted children were .1703 for the fourth grade and .1327 for the seventh grade.

It can be seen from the overlap in the confidence intervals that the differences between these proportions for the two grade levels would not be considered to be statistically significant. The data were subdivided in order to estimate the proportion of underachievers among more highly gifted pupils at each grade level. The pupils utilized for making these estimates had obtained I. Q. scores of 132 and up.

The 95 per cent confidence interval for the proportion of underachievers in the two grades were .239; .399 and .1043; .3303, respectively. The best single point estimates for the proportion of underachievers among highly gifted pupils were .3190 for the fourth grade and .2023 for the seventh grade. Again, it may be seen from the overlapping confidence intervals that the differences between proportions for the two grade levels involved would not be considered to be statistically significant.

Are There Significant Differences Among Three Categories of School District Size With Respect to Both Incidence and Degree of Underachievement?

Chi-square tests of independence for the two variables (size of school district and underachievement-achievement for gifted children) indicated no significant relationship at the fourth grade level, but less than expected underachievement for medium size school districts at the seventh grade level.

Analysis of variance procedures were used to test the significance of differences in degree of underachievement for the three district size categories. These analyses indicated non-significant differences among the size categories for both grade levels.

Is There a Significant Difference Between Two Categories of Educational Expenditure with Respect to Both Incidence and Degree of Underachievement?

Contingency Chi-squares were similarly obtained from dichotomizing per pupil expenditures and underachievement-achievement for the two grade levels. In this case, the fourth grade Chi-square indicated a significant relationship between the variables, but the seventh grade data did not.

The direction of the relationship for the fourth grade indicated that there was less than expected underachievement in low cost schools. Analysis of variance procedures indicated non-significant differences in degree of underachievement between cost categories for both grade levels. These results generally indicated the unimportance of total per pupil cost, as here defined, in relationship to underachievement.

Are There Significant Differences Among Specific Academic Skills With Respect to Both Incidence and Degree of Underachievement?

The gifted pupils from both grade levels were tallied for underachievement under six specific skill areas after identifying underachievers on the basis of total battery discrepancy scores.

This analysis indicated greater than expected incidence of underachievement for fourth graders in reading comprehension, arithmetic fundamentals, mechanics of English, and spelling. Less than expected proportion of underachievement for fourth graders was obtained in reading vocabulary and arithmetic reasoning.

Greater than expected incidence of underachievement was obtained for seventh graders in mechanics of English and spelling. Less than expected incidence of underachievement for seventh graders was obtained in reading vocabulary, reading comprehension, arithmetic reasoning, and arithmetic fundamentals.

The total sample of gifted pupils was also classified as "achieving" or "underachieving" separately under each skill category regardless of their achievement classification on total battery.

Utilizing this procedure among fourth graders, greater than expected incidence of underachievement was observed in reading comprehension, arithmetic fundamentals, and mechanics of English. Less than expected incidence of underachievement among fourth graders was observed for reading vocabulary, arithmetic reasoning, and spelling.

Greater than expected incidence of underachievement was observed among seventh graders in reading vocabulary, mechanics of English, and spelling. Less than expected incidence of underachievement was observed in reading comprehension, arithmetic reasoning and arithmetic fundamentals.

Analysis of variance procedures were used in order to investigate significant differences in degree of underachievement between the six skill areas for underachievers identified on total battery scores. The results of these procedures indicated significant differences between skill areas at both grade levels.

Sub-analyses indicated ten significant differences between individual skill area means at the fourth grade level and nine significant differences at the seventh grade level.

A relative ranking of degree of underachievement by skill area (from lesser to greater underachievement) for the fourth grade is arithmetic reasoning, reading vocabulary, spelling, arithmetic fundamentals, reading comprehension and mechanics of English. A similar relative ranking of skill areas for the seventh grade is arithmetic reasoning, arithmetic fundamentals, reading comprehension, reading vocabulary, mechanics of English and spelling.

Is There a Significant Difference Between Upper and Lower (4th vs. 7th) Grades With Respect to Incidence of Underachievement?

This question was investigated by two analytic methods. First, the estimated proportion of underachievers at each grade level and their standard errors based upon stratified sampling procedures were used to constitute a z-ratio pertinent to the implied hypothesis. The obtained ratio was not significant at the .05 level.

The second method utilized was a contingency Chi-square based upon the two variables, grade level and gifted achievers-underachievers. A significant Chi-square was obtained and led to the rejection of the hypothesis of independence of variables. These results were, of course, contradictory.

It should be noted that in the first case the statistical test took account of the relative weighting of the strata in terms of stratum size; the second did not. In either case, however, the observed proportion of underachievement for seventh grade gifted pupils was less than for fourth grade gifted pupils.

The means for degree of underachievement of gifted children from the two grade levels were found not to be significantly different in a supplementary analysis.

Is There a Significant Difference Between Two Levels of Academic Aptitude (I. Q. Scores 116-131 vs. I. Q. Scores 132 and up) With Respect To Incidence of Underachievement?

Incidence of underachievement as a function of degree of giftedness was investigated by dichotomizing the gifted pupils. Two groups, "high" and "low", were identified by taking I. Q. scores 132 and up vs. I. Q. scores 116-131 as the classification criteria.

Contingency tables were then organized for each grade level. These tables took account of the level of aptitude and achievement-underachievement status. Chi-squares computed on this basis were significant for the fourth grade, but non-significant for the seventh grade. The fourth grade Chi-square indicated significantly greater underachievement for highly gifted pupils than for the less gifted.

Is There a Significant Relationship Between Degree of Scholastic Aptitude and Degree of Underachievement?

The significance of the relationship between degree of aptitude (I. Q.) and degree of underachievement for gifted underachievers at each grade level was investigated. It was assumed that the relationship would be linear; hence, Pearson r's were computed and tested for significance against an hypothesized value of zero. The obtained coefficients were + .043 and + .140 for the fourth and seventh grades respectively. Neither was found to be significantly different from zero.

LIMITATIONS

Generalizations based upon the results of the reported project must be qualified in terms of the specific methods and procedures of the project. Unique definitions and criteria were applied to the problem at a number of points. Where such decisions rested upon judgmental considerations, it was felt that conservatism should be followed. Some of the limiting factors associated with the project were beyond control and represent unknown limitations, e.g., self-selective nature of the final sample. It behooves the interested reader to take account of all such limiting conditions associated with the project and to qualify the evidence at hand in terms of his purposes.

CONCLUSIONS

Conclusions seem justified within the framework of the reported project.

1. The incidence of underachievement among gifted elementary school children is less than sometimes assumed. About 17% of all fourth grade students who tested above 116 I. Q. score were found to be underachievers. Among the seventh grade students, 13% were found to be underachieving.

   Underachievement is more frequent among those students who tested above an I. Q. score of 132 than those with I. Q. scores between 116 to 131. Within this highly gifted group, 31.9% of fourth graders and 20% of seventh graders were found to be underachieving.
2. In general, the size of a school system does not seem to be significantly related to either the frequency or degree of underachievement among gifted elementary pupils.
3. In general, per pupil expenditure on the part of school systems does not seem to be significantly related to either the frequency or degree of underachievement among gifted elementary school pupils.

4. Skill deficiencies in both frequency and degree vary significantly within a grade level and change between grade levels. At the fourth grade level, the greatest frequency of underachievement for gifted children was observed in reading comprehension, arithmetic fundamentals, mechanics of English, and spelling. At the seventh grade level, these skill areas were mechanics of English, and spelling.

   A rank ordering of skill areas indicating degree of underachievement for gifted fourth grade pupils was from highest to lowest:

   mechanics of English
   reading comprehension
   arithmetic fundamentals
   spelling
   reading vocabulary
   arithmetic reasoning

   A similar ranking for gifted seventh graders was:

   spelling
   mechanics of English
   reading vocabulary
   reading comprehension
   arithmetic fundamentals
   arithmetic reasoning

5. The frequency of underachievement among gifted pupils was observed to decrease from fourth grade to the seventh grade. No statistically significant change in degree of underachievement for underachievers was observed between grades.
6. At the fourth grade level, significantly higher frequency of underachievement among highly gifted pupils was observed than among more moderately gifted pupils. The observed difference was not significant at the seventh grade level.
7. No significant relationship between degree of aptitude and degree of underachievement for gifted pupils seemed to exist at either grade level.

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VERIFICATION OF POSSIBLE INTELLECTUAL GIFTEDNESS BY THE USE OF INDIVIDUAL INTELLIGENCE TESTS

DAVID W. WINEFORDNER and GEORGE E. HILL
Ohio University

INTRODUCTION

Educators have long been aware of the different learning capacities of children and the need for curriculum planning and programming to meet their differential needs. Many educators are concerned about the special problems and challenges presented by children with high learning capacities. The school's responsibility for providing educational opportunities to develop these individuals' capacities is recognized.

Essential to any program of educating the gifted is the proper identification of students to be included in the program. With a reasonable degree of certainty, the identification of gifted students can be made by using individual intelligence examinations. The administration of individual tests to all students in order to find the gifted is expensive and time consuming. This necessitates the use of screening procedures for referrals for individual testing. Group intelligence tests are used by many schools as a screening method for identification. Pupils scoring above a certain point are given individual tests to verify the group test findings.

Many schools do not have access to psychological services nor do they have personnel on their staff trained to administer individual tests. Group intelligence test results are generally used by these schools for identifying students for special programs or enrichment in regular classrooms. Group tests do have their limitations. Some students have reading difficulties or emotional and motivational problems which will hinder group tests in measuring their true mental ability.

PROBLEM

The purpose of this study was to investigate the possibility that some intellectually gifted children are being overlooked in schools which use group intelligence tests as the basis for initial screening or for inclusion in programs for the gifted. Studies have shown that some children receive higher I. Q. scores in individual testing than in group testing, while for others the reverse is true. This finding is common enough to create concern about the use of group intelligence tests in identifying gifted children.

PROCEDURE

The criterion used in this study for identifying children as gifted was that they received an I. Q. score of 125 or above on the *Stanford-Binet Intelligence Scale.* This would include approximately seven per cent of the children in a normally distributed group.

To identify gifted students who had group intelligence quotients below 125, the following procedure was used:

1. Three school districts were selected for the study, two in Southeastern Ohio (Nelsonville and Logan), and one in Central Ohio (Worthington).
2. In the three school districts, all children in grades four and six were given the *California Test Of Mental Maturity, Elementary, Long Form.* Children in grade eight were given the *California Test of Mental Maturity, Junior High, Long Form.*
3. A representative sample of 240 children having a California I. Q. score between 100 and 124 inclusive, was selected from these three grades, eighty at each grade level.
4. An individual intelligence test, the Stanford-Binet, was administered to this sample of 240 children.
5. Those children who received an I. Q. score of 125 or above on the *Stanford-Binet Intelligence Scale* were then classified as gifted.

To determine if differences existed between the group identified as gifted and those who were not, a comparison group having group intelligence quotients similar to the gifted group was selected. The two groups were compared in the following areas:

1. School marks as determined by grade point averages.
2. Scores on standardized achievement tests.
3. Family background obtained from the cumulative record and an information sheet sent home to parents for completion.
4. Information about individual characteristics and traits obtained from a teachers' rating sheet.

The differences occurring between the two groups were used to make recommendations which would help to identify gifted children who are sometimes overlooked when group intelligence tests alone are used.

A comparison of the relationship between the I. Q. scores of the Stanford-Binet and the *California Test of Mental Maturity* was made. The comparisons were made in the following areas:

1. Correlations between the two tests for each grade level and total sample.
2. Deviation between the two tests for each child.
3. Number of children having Stanford-Binet I. Q. scores deviating above or below the *California Test of Mental Maturity* I. Q. score range (100-124) used in the study.

FINDINGS

The *California Test of Mental Maturity* was administered to grades four, six, and eight in the three school districts. This was followed by the administration of either Form L or L-M of the Stanford-Binet to the selected sample of 240 children. Form L I. Q. scores were converted to the same deviation form in which Form L-M I. Q. scores were computed by the use of the Pinneau Revised I. Q. Tables.[1]

Of the 240 children with California I. Q. scores between 100 and 124, there were thirty-two who had Stanford-Binet I. Q. scores of 125 or over. From this, it can be inferred that had group test I. Q. scores with a cutting point of 125 been used for screening or identification, these results would have overlooked thirty-two gifted children.

Comparison of the "Gifted" and "Non-Gifted"

The purpose in comparing the gifted group with the non-gifted group was to see if there were differences between the two groups that would help to identify the gifted. The gifted and non-gifted groups were compared to see if there were differences in the following areas: (1) achievement on the standardized tests, (2) classroom achievement (grade point average), (3) family background information, and (4) teachers' ratings of characteristics. All test results were obtained during a six month period and the other data were collected during the same school year.

Of the children scoring between 100 and 124 inclusive on the *California Test of Mental Maturity*, 208 children received an I. Q. score below 125 on the Stanford-Binet and formed the comparison for the study. Since thirty (94 per cent of the gifted group had California I. Q. scores between 110 and 124, the comparison group was selected from those remaining children with a California I. Q. score between 110 and 124, who were not identified as gifted by the Stanford-Binet. This comparison group is referred to as the "non-gifted" in this study.

Comparision of Achievement on Standardized Tests

A comparison of achievement on standardized tests was made between the gifted and non-gifted groups. The grade placement scores recorded in the cumulative records and office files were used. The grade placement achievement scores were grouped into six intervals according to the number of standard deviations from the mean, as reported in the test manuals for that particular grade level and test. Two different achievement tests were used by the schools in the study. They were the *California Achievement Test* and the *Stanford Achievement Test.*

The battery achievement levels for the gifted and non-gifted groups were calculated. There were statistically significant differences at the .05 and .01 levels between the mean achievement for the total battery scores of the gifted group and the non-gifted group, with the gifted scoring higher. Seventy-five per cent of the gifted group, as compared with thirty-five per cent of the non-gifted group, achieved at one or more standard deviations in grade placements above the norm level of actual grade placement at the time of testing. There was no significant difference between the mean achievement level of the gifted males and gifted females for the battery results. There was a significant difference between the gifted and non-gifted groups for the battery sections of Reading and Arithmetic, but not for the Language section. The mean grade placement standard deviation of the gifted and non-gifted groups, along with the critical ratio for the difference between the means for the achievement battery and part scores, are shown below:

	Mean		
	Gifted	Non-Gifted	t
Arithmetic	1.08	.55	3.178
Reading	1.29	.80	3.049
Language	1.11	.98	.906
Battery	1.20	.72	3.678

Classroom Achievement

The classroom achievement, as measured by the grade point average, was about the same for the gifted and non-gifted group. The mean grade point average* for the gifted group was 3.06 (B=3.00) and the non-gifted group had a grade point average of 2.99. A test of significance between the means showed no difference between the two groups. The greatest difference in grade point averages occurred between the males and females as is shown in these results:

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*G.P.A. was cumulative for total grades received in school.

	Gifted Grade Point Average	Non-gifted Grade Point Average
Male	2.84	2.79
Female	3.32	3.16
Total	3.06	2.99

There were 66 per cent of the gifted having a grade point average of 3.0 or better as compared to 58 per cent of the non-gifted group having a 3.0 or better.

Parent Educational and Occupational Background

Up-to-date information concerning the educational background and occupations of the parents was obtained by having the parents complete a Parent Information Sheet.

The educational level of the parents of the gifted group was higher than the educational level of the parents of the non-gifted group. Forty-six per cent of the fathers and 58 per cent of the mothers of the non-gifted group terminated their education at the high school level as compared with 28 per cent of the fathers and 38 per cent of the mothers of the gifted group. A statistical test between proportions showed a significantly higher (.05 level) per cent of both the fathers and mothers of the gifted group going on to college than of the parents of the non-gifted group.

The occupations of the parents were classified according to the Edwards Classification.[2] This classication lists the occupations under six headings: (1) Professional and Semi-Professional, (2) Proprietors, Managers and Officials, (3) Clerks and Kindred workers, (4) Skilled workers and Foremen, (5) Semi-skilled workers, and (6) Unskilled workers.

Most of the father's occupations for the gifted and the non-gifted groups were classified into the first two groups of the Edwards Classification as shown below:

	Gifted	Non-Gifted
Professional and Semi-Professional	56%	30%
Proprietors, Managers and Officials	21%	35%

A statistical test of significance between proportions was used to see if there was a difference between the per cent of fathers of the gifted and non-gifted groups whose occupations were listed in the professional or semi-professional classification. Significant differences at the .05 and .01 levels were found with more of the fathers of the gifted group in this occupational classification.

An analysis of the occupations of the mothers showed that 77 per cent of the non-gifted mothers were housewives as compared to 53 per cent of the gifted group. The highest per cent of the working mothers of the gifted and non-gifted groups were in the professional and semi-professional occupations.

Trait Ratings

In the study, classroom teachers rated the children on several traits. These traits are reported in the literature as those generally possessed by gifted children.

The first six traits listed on the Teachers' Rating Sheet were: (1) Group Responsibility-Dependability, (2) Individual Responsibility-Dependability, (3) Creativeness and Imagination, (4) Serious Purpose, (5) Work Habits, and (6) Social Adjustability. The ratings of these traits by the teachers show a sex difference. Girls were rated higher in all of these six traits except Creativeness and Imagination, where boys were rated the same. A test of significance (Chi Square and difference between proportions) showed a difference at the .10 level between the gifted and non-gifted groups on the trait of Creativeness and Imagination, with more of the gifted group being rated higher.

The percentage of gifted and non-gifted children receiving a rating as being in the upper one-fourth of a normal group for the remaining traits was calculated. There was a significant difference at the .10 level for the traits of Creativeness and Imagination, Mental Ability, and Judgment, and a significant difference at the .05 level for the trait of Curiosity, with more of the gifted being rated in the upper one-fourth category. The gifted group was rated lower than the non-gifted group in the traits of Physical Development, Leadership, and Emotional Control, but the difference was not significant.

Relationship between the California Test of Mental Maturity and the Stanford-Binet

To determine the relationship between the *California Test of Mental Maturity* and the Stanford-Binet, two methods were used: (1) deviation between the I. Q. scores obtained from the two tests for each child was computed, and (2) correlations between the two tests for grades four, six, eight and the total group were computed.

Deviation between the California Test of Mental Maturity and the Stanford-Binet I. Q. Scores

A distribution chart of California and Stanford-Binet I. Q. scores was made for the study sample. From this data it was found that forty-one children had a Stanford-Binet I. Q. score of less than 100, with most of this group having a California I. Q. score of below 110. Most of the group having Stanford-Binet I. Q. scores of 125 or more had California I. Q. scores of over 114. This finding indicated that most of the group with individual I. Q. test scores deviating below 100 came from the lower part of the California sample group and that most of the group deviating above 124 came from the upper part of the sample group. Although there are fewer Stanford-Binet deviations above the sample group than below, the range of deviation was greater above.

By grade level there was little difference as to the number of students with Stanford-Binet I. Q. scores between 100 and 124 inclusive. The greatest difference between grade levels for those having Stanford-Binet I. Q. scores of 99 or below, and 125 and above, occurred at the sixth grade, with more than twice the number having a Stanford-Binet below 100 than above 124, as shown below:

	Stanford-Binet I. Q.		
	99 or below	100 to 124	125 or above
Grade Four	12	54	14
Grade Six	18	55	7
Grade Eight	11	58	11

Sheldon and Manolches,[3] in a study of 422 children in grades one through six to determine the relationship between the I. Q. scores of the Stanford-Binet and the *California Test of Mental Maturity* (Short Form), reported that 44.6 per cent of the cases showed a deviation of ten or more I. Q. points; 24.6 per cent deviated more than fifteen I. Q. points; and 13.8 per cent deviated more than 30 I. Q. points.

By comparing the Stanford-Binet and *California Test of Mental Maturity* (Long Form) I. Q. scores obtained for each child in the present study, it was found that 38.3 per cent of the cases had a deviation of ten or more I. Q. points; 16.7 per cent had a deviation of fifteen or more points; and 6.3 per cent had a deviation of twenty points or more.

An analysis of score deviations in the total sample, for each grade tested, was made. The mean deviation and per cent deviating more than 10, 15, and 20 I. Q. points were calculated. There were no significant differences between the mean deviations. Grade six showed the highest mean deviation and per cent of scores deviating more than 10 and 15 I. Q. points. There were 134 Stanford-Binet I. Q. scores deviating below the California I. Q. score (55.8 per cent) and 106 Stanford-Binet I. Q. scores having no deviation or a higher deviation from the California I. Q. score (44.2 per cent).

An analysis of score deviations was made between the California and Stanford-Binet I. Q. scores to see if there was a sex difference. There were no significant sex differences between the mean deviations, although the mean deviation for the boys was slightly higher and their score deviations were more variable, as is indicated below:

	1-10	11-20	21-30	31-40	Mean Deviation
Boys	77	31	6	2	9.01
Girls	81	29	4	0	7.48
Total	158	60	10	2	9.00

The group identified as gifted was about evenly divided as to sex; seventeen were boys and fifteen were girls. A breakdown of I. Q. deviations for this gifted group indicates that the boys had significantly greater I. Q. deviations than the girls as shown by these results:

	1-10	11-20	21-30	31-40	Mean Deviation
Boys	6	5	4	2	16.5*
Girls	9	6	0	0	9.7*
Total	15	11	4	2	13.1

*significant difference between male and female deviations at the .05 level.

Correlation between the California Test of Mental Maturity and the Stanford-Binet

The correlation between the two tests was +.515 for the total sample. Grade eight showed the highest correlation (+.592) between the two tests while the sixth grade had the lowest (+.418). It should be recognized that this is a study of a limited range of I. Q. scores and that correlations for a limited range are generally lower than the entire population range.

California Test of Mental Maturity; Language, Non-Language I. Q. Score Difference

There was a higher percentage of the gifted males than the non-gifted males with a Language—Non-Language, I. Q. score difference of 15 points or more. The reverse of this was found for the females. The percentage of the male-female totals for the gifted and non-gifted groups, having a Language—Non-Language I. Q. score difference of 15 points or more, was about the same. The greatest difference was found between the males and females in the gifted group. There were ten (58.8 per cent) of the gifted males and one (6.7 per cent) of the females with a Language—Non-Language difference of 15 or more I. Q. points.

For the total study sample (240) there were 73 with either a language or non-language I. Q. score higher than the other; 44 of these having a language I. Q. score 15 points higher than the non-language, and 29 having a non-language I. Q. score 15 points higher than the language I. Q. score.

SUMMARY AND RECOMMENDATIONS

Summary

The findings of this study indicate that some gifted children are overlooked when group test results are the only criterion used for identification.

The *California Test of Mental Maturity* was administered to grades four, six, and eight in three school districts. From the group of children in these three grades having a California I. Q. score of 100 to 124 inclusive, a representative sample of 240 was selected. This sample of 240 children was administered an individual intelligence test, the Stanford-Binet.

Thirty-two gifted children, with Stanford-Binet I. Q. scores of 125 or more, were identified. To identify thirty-two gifted children, 240 Stanford-Binet tests were administered. Had only the group of 150 children in the sample with California I. Q. scores between 110 and 124 been given the Stanford-Binet, thirty of the thirty-two gifted children identified in this study would have been included. For screening purposes, a California I. Q. score of 110 could have been used with 94 per cent accuracy as a cutting point in this study.

A group was selected from those whose Binet I. Q. scores were below 125 with which to compare the children who were identified as gifted, (Binet I. Q. scores of 125 or more). Since thirty (94 per cent) of the children identified as gifted had a California I. Q. score between 110 and 124, the remaining 120 children in the study sample with California I. Q. scores between 110 and 124 were selected as the comparison group. The two groups were compared to see if differences occurred between them in: (1) classroom achievement as measured by the cumulative grade point average, (2) achievement as measured by standardized achievement tests, (3) parents educational and occupational background, and (4) individual teacher ratings on certain characteristics and traits.

There was a statistically significant difference between the gifted and non-gifted groups in achievement on standardized achievement tests, with higher achievement in the gifted group. Seventy-five per cent of the gifted group, as compared with thirty-five per cent of the non-gifted group, achieved at one or more standard deviations in grade placements above the norm level of actual grade placement at the time of testing. There were also significant differences between the gifted and non-gifted groups for the battery sections of Reading and Arithmetic, but not for the Language section.

There was no significant difference between the gifted and non-gifted groups in classroom achievement as measured by the grade point average.

The girls in both the gifted and non-gifted groups, achieved at a higher level than the boys on the standardized achievement tests and had a higher grade point average, but this difference was not statistically significant.

Classroom teachers using the Teacher Rating Sheet tended to rate the gifted group higher than the non-gifted group on traits generally considered to be possessed by gifted children. There was a significant difference (.10 level) for the traits of Creativeness and Imagination, Mental Ability, and Judgment, and a significant difference (.05 level) for the trait of Curiosity. The gifted group was rated lower than the non-gifted group for the traits of Physical Development, Leadership, and Emotional Control, but the differences were not significant.

The educational level of the parents of the gifted group was higher than that of the non-gifted group. There was a statistically significant difference between the number of parents of the gifted group who had gone to college as compared with the parents of the non-gifted group.

A significantly higher percentage of the fathers of the gifted group were classified in an occupation of a professional or semi-professional nature. An analysis of the occupations of the mothers showed that 77 per cent of the non-gifted group mothers were housewives as compared to 53 per cent of the gifted group. The highest per cent of the working mothers of the gifted and non-gifted groups were in the professional and semi-professional occupations.

An analysis of the relationship between the *California Test of Mental Maturity* and the Stanford-Binet showed the Stanford-Binet I. Q. scores deviated from the California I. Q. scores by ten points in 38.3 per cent of the cases; 16.7 per cent had a deviation of fifteen or more points; and 6.3 per cent had a deviation of twenty points or more. The mean deviation was 8.2 I. Q. points. The correlation between the California and the Stanford-Binet I. Q. scores was +.515 for the total sample, +.544 for grade four, +.418 for grade six, and +.592 for grade eight.

Recommendations

Based upon the findings of this study, the following recommendations may be applied to procedures of identification of gifted children.

1. Individual intelligence tests should be used for the most reliable selection procedure. Where no personnel are qualified to administer individual intelligence tests, or such service is limited, it is recommended that standardized tests of achievement, teacher recommendations and ratings, and study of home and family background be used with group intelligence test results.
2. If group intelligence tests alone are to be used, the standard error of measurement should be taken into consideration. The standard error of measurement for the *California Test of Mental Maturity* is approximately 5 I. Q. points. The findings of this study indicate that, when the group being screened included California I. Q. scores 15 points below the Stanford-Binet I. Q. cutting point of 125 for inclusion in the gifted group, 94 per cent of the gifted were identified. Had the group I. Q. cutting point been placed 10 points below, only 75 per cent would have been identified, and five points below would have included only 53 per cent.
3. If group intelligence tests are used, their value as a selective procedure will be enhanced by the additional use of an achievement test battery. Students achieving at one or more standard deviations in grade placements above the norm level of actual grade placement on standardized achievement tests at the time of testing should be included in the identification process.
4. As shown by other studies of the gifted, this study reinforces the implications of family background information in identifying gifted children and planning programs for them. Family background information should be used in the identification process. The findings of this study indicate significant differences in both the educational and occupational levels of parents. Care must be exercised not to overlook children from culturally deprived homes where an educational atmosphere is lacking.
5. Teacher ratings should be included in the identification process. The findings of this study indicate that the gifted were rated significantly higher for the traits of Curiosity, Creativeness and Imagination, Mental Ability, and Judgment.

The following are general recommendations based upon sound theory and practice.

1. Identification procedures should begin early and cover a span of years rather than a "one-shot" attempt without follow-up.
2. Up-to-date cumulative records should be kept containing information to be used in the identification procedure.
3. Where group intelligence test results are used, the school testing program should be designed to provide more than one test score. Several test scores viewed together provide a pattern nearer the "true" mental potential than any single test score.
4. Special attention should be given to following the established standardized testing procedures to insure uniform administration, scoring, interpretation, and use of the test results.
5. Guidance services should be provided for all children to stimulate and foster the development of personal characteristics conducive for maximal achievement in accordance with their mental potential.

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A STUDY OF THE DEGREE OF CONSISTENCY AND FACTORS RELATED TO CONSISTENCY IN THE GROUP INTELLIGENCE TEST SCORES OF GIFTED CHILDREN IN FOUR OHIO SCHOOLS

ROBERT W. SCHMEDING AND GEORGE E. HILL
Ohio University

THE PROBLEM

It was the purpose of this study to: (1) determine the consistency of the group intelligence test scores of a selected sample of gifted children, (2) examine the consistency of the group tests as a means of identifying children with intelligence quotients of 120 or higher, and (3) examine some of the variables which might conceivably bear a relationship to giftedness, with particular attention to the relationship between these variables and consistency of the intelligence quotients secured by the children on recurring tests.

LIMITATIONS OF THE STUDY

This study was limited to the extent that an exact determination of giftedness is probably impossible. An arbitrary cutting-point of a 120 I. Q. score on a group test is further limited, since any of the present standardized mental ability tests provide us with only a sample behavior, and the group being studied is not necessarily homogeneous with the groups upon which the tests were standardized. An I. Q. score of 120 will not mean the same thing in different schools using different tests at different times.

Although an attempt was made to select schools which were representative of categories of "privilegedness" based upon the per-pupil evaluation figure and the minimum teacher salary, the results of the investigation will apply only to the schools included in the study.

An attempt was made to find schools in Ohio in which the same test, changing only as to age levels, was used. There is probably a fairly large number of schools now doing this, but since each school had to have a sequential testing program of at least ten years duration, the task of finding four systems using the same test sequentially over a period of ten years proved to be insurmountable.

The two major procedural methods used in this study were the school records analysis and the questionnaire survey. The study was limited by the accuracy and completeness of the school records. Attention was given to selecting schools with reasonably complete records, but individual gaps in information are inevitable even in those systems where record-keeping is closely supervised.

The questionnaire survey was conducted in such a way that a 100 per cent return was assured. Since many of the items of the questionnaire depended upon the recollection of dates, names, and happenings, some error is undoubtedly present and even expected. The questionnaires were completed within the confines of the school and with the aid of the schools' guidance workers. It is hoped that this error has been kept to a minimum.

THE SAMPLE, METHOD, AND MATERIALS OF THE STUDY

The Sample

In order to arrive at some objective indication of the degree of privilegedness among school systems, it was determined to utilize the per-pupil evaluation figure and the minimum level of teacher salaries for teachers with the Bachelor's Degree.

Accordingly, per-pupil evaluation figures and salary figures were obtained on 1,059 Ohio school systems. Three distributions, one each for city, county, and exempted village school districts, were plotted. In each distribution, the thirty-third and sixty-sixth percentiles were computed and used as cutting-points.

School systems placing below the thirty-third percentile in each distribution were designated as "lower-third" school systems. School systems placing above the sixty-sixth percentile were designated as "upper-third," while those placing between the two cutting-points were designated as "middle-third" systems.

Using the same procedure, and utilizing data relating to teachers' salaries, distributions of minimum Bachelor's Degree salaries were plotted for the three types of school systems.

Because of the fact that in some districts extensive industrial property results in high per-pupil evaluation figures, it was decided to include in the upper-third only those districts having property predominantly of a residential nature as the basis for per-pupil evaluation.

Using these six distributions, schools placing in the lower-third, upper-third, and middle-third categories in regard to both criteria were selected as the list of schools to be investigated further for possible inclusion in the study.

Since it was agreed at the outset of the study to select schools in the three categories of privilegedness on the basis of their having a sequential testing program of at least ten years duration, the next step was to contact school officials by mail in order to secure this information. The lists were further narrowed down and visitations were made to those schools reporting a testing program of the type indicated above, to enlist the cooperation of school officials in the study.

The visitation to the schools revealed that it was not possible to find schools in which the same test series, changing by grade levels, was used throughout the sequential testing program. This difficulty arose because the study design required that schools participating in the study should have a reasonably complete cumulative records system, as well as meeting the criteria relating to placement in the levels of privilegedness.

Therefore, two schools were tentatively selected in which the *California Tests of Mental Maturity* (long and short forms) were used throughout their testing programs. Two additional schools were selected in which the *California Tests of Mental Maturity* had been used to as great an extent as possible.

The four schools finally selected were coded as schools "A", "B", "C", and "D". Schools A and B were in the lower-third category of privilegedness, school C in the middle-third, and school D in the upper-third. Although it was originally determined to select only three schools, it was felt that inclusion of a fourth school would enhance the results obtained. Thus, two schools from the lower-third category were included, providing for a larger sample from this level than would have been possible had only one school been used.

Selection of Gifted Subjects

Recorded group intelligence test scores, secured from the cumulative records of each participating school, were used as the basis for the selection of the study subjects.

In order to insure a sufficiently large sample, students enrolled in the eleventh and twelfth grades at the time of the study were selected for further investigation. In two grades of the four schools, 1,302 students were identified, of whom 658 were in the junior class and 644 in the senior class. Of the total, 51 per cent were males and 49 per cent were females. The lower-third schools accounted for 31 per cent of the total, the middle-third school had 40 per cent, and the upper-third school, 29 per cent.

Because some students had test patterns that were irregular, only students whose records revealed test patterns identical with the testing pattern of the majority of students were included in the study. In other words, if a student's testing pattern was not typical of the regular testing program employed in his school, he was dropped from further consideration. This would include students who had transferred into the school, who had been absent when regular test administrations were held, or who had test patterns different from the majority of students in their grade.

Using the recorded group intelligence test scores, all eleventh and twelfth grade students scoring at or above the 120 I. Q. level at some point in the sequential testing were identified as subjects for further investigation.

The 120 I. Q. score was used as the cutting-point in this study because it seemed to be the lowest cutting-point presently used in Ohic schools. In this way, it was felt that the study would be more applicable in Ohio.

Students who had less than three recorded group I. Q. test scores were eliminated from consideration. As has been previously noted, only those students were included whose test scores were recorded while they were students in the participating schools.

Tests used in the sequential testing programs of the four study schools were the *California Tests of Mental Maturity* (schools A, B, C, and D), the *Pintner-Cunningham Primary Test* (schools B and C), and the *Pintner General Ability Tests* (school C).

It is known that we cannot accurately compare the results of different group intelligence tests, standardized on different norm groups, and changing by age level. It was decided that evaluating the consequences of doing this would be useful to this study, inasmuch as (1) in practice, some school officials do consider the results of different group intelligence tests as comparable, (2) if gifted programs were to be set up in any school, some school officials would be prone to select subjects on the basis of the highest group intelligence test score, regardless of whether or not this test score resulted from a test that had been used consistently in that school. (3) regardless of which tests have been used, some school officials would still utilize the reports from several tests in ascertaining a pattern, and (4) no single test of general intelligence presently available measures all types of giftedness, so that student placement in gifted programs based upon several different tests may be no more remiss than the practice of using the only score available where only one test has been administered.

When the final sample was arrived at, it was found that of the total eleventh and twelfth grade population in the four schools, the following numbers and percentages of students had scored at or above 120 I. Q.: school A, thirty-five students (12 per cent); school B, twenty-two students (18 per cent); school C, 104 students (20 per cent); and school D, thirty-eight students (10 per cent).

A final total of 101 juniors and ninety-eight seniors in the four schools resulted. Ninety-nine of these were males and 100 were females. Of the total number of students in the four schools, 15 per cent were identified as gifted.

A further categorization was established in regard to the subjects of the study. Since it was noted that some students score at or above 120 I. Q. only once in sequential testing, while others may do so consistently or inconsistently at each successive testing, four "persistence categories" were set up. These were:

1. Consistents—Those who consistently scored at or above 120 I. Q.
2. Inconsistents—Those whose I. Q. scores fluctuated above and below 120.
3. Regressents—Those who tested above 120 I. Q. early in their school lives and who later dropped below this level.
4. Emergents—Those who tested below 120 I. Q. on early tests and who later scored above this point.

The total sample of 199 gifted subjects produced the following numbers and percentages for each category:

Category	Number	Percentage
Consistents	29	15
Inconsistents	71	36
Regressents	82	41
Emergents	17	8

School Records Analysis

Since it was a purpose of the study to examine some of the correlates of giftedness as expressed by test scores, a system for securing information relating to these correlates was needed. A cumulative records analysis form was devised and underwent a preliminary application in one of the schools. On the basis of experience in the use of this preliminary form, certain modifications were made and the final cumulative records form resulted.

Questionnaire Survey

Because even the most complete cumulative record system will be lacking in certain areas, it was necessary to devise a personal data form to be administered to each subject selected for the study. This form provided data useful for cross-checking the data gathered from the cumulative records, as well as other information not commonly kept in school records. As was the case with the cumulative records analysis form, the personal data form was first checked in one of the study schools, then modified as usage dictated.

The Sims Score Card

Along with the administration of the personal data form, a copy of the *Sims Score Card* (Hieronymus' Revision) was administered to each subject. This was completed at the same time as the personal data form and returned to Ohio University by the school officials having charge of its administration. Again, a 100 per cent return was realized.

THE MAJOR FINDINGS

Selection of Gifted Subjects

Chi-square was used in connection with the following null hypotheses regarding the selection of gifted subjects:

1. There is no difference in the number of gifted subjects identified in each of the four schools for inclusion in the study, nor in the number of students excluded from the study.
2. There is no difference in the number of males and females identified among the four schools.
3. The number of juniors and seniors identified for inclusion in the study is unrelated to the schools from which they come.
4. The number of males and females scoring at or above 120 I. Q. at some point in sequential testing is unrelated to the school classes to which they belong.

The first and third hypotheses were rejected at the .05 level; the second and fourth were retained. It was demonstrated that there was a difference in the four schools as regarded the total number of gifted students identified, and the number of juniors and seniors identified in each of the schools. No difference was found in the number of males and females identified in the four schools, and no relationship was demonstrated between sexes and eleventh and twelfth-grade placement of sexes.

Consistency of Group Intelligence Test Scores and Identification of the Gifted

It was found that children who had scored at or above 120 I. Q. at some point in sequential testing seldom maintained this level in subsequent testings. In fact, only 15 per cent of 199 subjects of the study were consistently at or above an I. Q. score of 120 throughout sequential testing. In other words, for this sample of children, a great amount of inconsistency was demonstrated.

Of the total sample, 41 per cent had test score histories indicating early tests above 120 I. Q. and later tests below this level. Eight per cent of the 199 students had scored below 120 I. Q. in earlier testing, but had, in later testing, scored at or above 120 I. Q. Thirty-six per cent had erratic test score histories, being at times above, and at other times, below this level.

Chi-square was used in connection with the following null hypotheses:

1. "There is no difference between the number of gifted subjects who will be identified as Consistents, Regressents, Inconsistents, and Emergents." This hypothesis was rejected at the .05 level.
2. "The number of gifted subjects identified as Consistents, Regressents, Inconsistents, and Emergents, is unrelated to the schools in which they will be identified." This hypothesis was rejected at the .05 level.
3. "There is no difference in the number of males or females that will be identified in the four persistence categories." This hypothesis was retained.
4. "The number of juniors and seniors identified for inclusion in the study is unrelated to the four persistence categories in which they are placed." This hypothesis was rejected at the .05 level.

Also, analysis of variance in connection with hypothesis one and three indicated that there was a significant difference at the .05 level in I. Q. scores secured at the last testing and between persistence categories, but not between sexes. It was found that sex differences did not vary from category to category.

The Problem of Early Identification

The obvious value of early identification of gifted children lies in the area of what might be done to better challenge such children in the school. A persistent question has been, "Do children who are identified early as being intellectually gifted tend to maintain their giftedness in subsequent years in school?" It was reasoned that if it could be shown that for this sample of children there was no difference in the number of gifted children who were identified at the first testing and the number identified in successive testings, some case could be made for early identification.

Two null hypotheses were tested with chi-square:

1. "The number of juniors and seniors at or above an I. Q. score of 120 at the first testing is unrelated to the schools from which they come." This hypothesis was retained.
2. "The number of males and females scoring at or above 120 I. Q. at the first testing is unrelated to the schools from which they come." This hypothesis was retained.

Since the importance of early identification of gifted children rests largely with the reliance that may be placed in the results of such testing for the future, the test results of the first and last testings were analyzed in connection with a third null hypothesis:

3. "There is no difference in the number of gifted subjects who will be identified at the first testing and number identified at the last testing." This hypothesis was rejected at the .05 level.

The results of the test analysis indicated that although 67 per cent of the total sample of 199 eleventh and twelfth grade gifted children would have been identified at the first testing, the number fluctuated from testing to testing following the initial testing, so that there was little basis for expecting trustworthy early identification of the gifted.

Correlates of Persistence of Giftedness

Persistence as Gifted Related to the Schools' Provision for the Gifted

The null hypothesis, "The provision of a special school program identified as applying to the needs of the gifted bears no relation to the persistence of children in the gifted category," was considered, and the following findings arrived at:

1. In considering all tests used in the four schools, the percentage of the total sample identified as having test scores at or above 120 I. Q. at some point in sequential testing who were Consistents, favored school D; the school having a program for the gifted.
2. The number of Consistents dropped sharply for seniors as compared with juniors in schools A and C, while in school D the percentage increased slightly over the two years. It was suggested that the presence of a program identified as applying to the needs of the gifted may have acted as a "brake" in reducing the attrition in Consistents from the junior to the senior classes.
3. Chi-square testing of the null hypothesis, "The number of Consistents that will be identified is unrelated to the schools from which they come," led to the rejection of the hypothesis at the .05

level, indicating the presence of a real relationship. This was not taken as conclusive proof for or against the contention that the presence of a special program applying to the needs of the gifted bears a relation to the persistence of children in the gifted category. It was felt very likely that the number of Consistents was also related to other variables, or correlates, such as socio-economic status, or school size.

4. Schools C and D had the largest percentages of Consistents, the differences for both classes favoring school D when all tests were taken into consideration, and school C when only *California Tests of Mental Maturity* were considered. It was suggested that although school C had no program identified as specifically applying to the needs of the gifted, it was by far the largest school of the four study schools, and thus, by being larger might provide curricular offerings of greater depth and breadth than schools A and B, and might be more nearly on a par with school D. This would suggest that schools having programs for the gifted contribute to the persistence of children in the gifted category. Further, larger schools, even though not having programs for the gifted, are perhaps more likely to provide a curriculum more conducive to the persistence of children in the gifted category than smaller schools.

Even though these findings were suggested, the basic hypothesis, "The provision of a special school program identified as applying to the needs of the gifted bears no relation to the persistence of children in the gifted category," was *not* tested.

Persistence as Gifted Related to Socio-Economic Status of the School

The null hypothesis, "The socio-economic level of the school bears no relation to the number of gifted students that will be identified," was considered, and the following conclusions arrived at:

1. The schools having lower socio-economic status (B and C) had the highest percentage of total eleventh and twelfth grade students identified as gifted, while the school (D) having the highest socio-economic status had the lowest percentage of students identified as gifted.
2. Chi-square testing of the hypothesis led to the rejection of the hypothesis at the .05 level. The data of the study revealed the relationship to be inverse, as was noted in point one (above).

Persistence as Gifted Related to the Socio-Economic Status of the Home

The null hypothesis, "The socio-economic level of a child's home bears no relation to his persistence in the gifted category," was considered and the following arrived at:

1. Chi-square was applied, with a frequency distribution made of the *Sims* scores. Quartiles were computed and the four persistence categories classified by *Sims* quartiles. The hypothesis was rejected at the .05 level.
2. Analysis of variance also led to the rejection of the hypothesis at the .05 level, with a significant difference demonstrated in *Sims* scores between categories but not between sexes. Sex differences were found not to vary from category to category.
3. Correlation analysis involved a comparison of the I. Q. score of each subject at the last testing with *Sims* scores. The last I. Q. test score was used in all correlations, inasmuch as this was felt to be most contemporaneous with *Sims* testing.
4. *Sims* scores for the total sample of the four schools, undifferentiated as to persistence, revealed that lower-third schools generally had lower scores than middle or upper-third schools, while the upper-third school had the highest scores.
5. In each of the four schools, a different picture was revealed in connection with each class, with the exception of school D. Consistents had the highest mean scores in school A in the junior class, and for the combined figures for the two classes. Consistents were highest for the senior class of school C and for both classes of school D. Of the four schools, considering two classes in each, or a total of eight class groups, 50 per cent, or four class groups, had Consistents scoring highest. In two classes Emergents scored highest, and Regressents and Inconsistents scored highest in one class each.
6. Lowest *Sims* scores were recorded for Inconsistents in all four junior classes and in the senior classes of schools B and D. For the total group in each school, Inconsistents scored lowest in three of the four schools, school A being the exception.
7. Standard deviation figures for the four classifications of persistence seemed to indicate a more homogeneous group in school D than in the other three schools.
8. When the total group of juniors was considered, Emergents had higher scores than other classifications, followed by Consistents, Regressents, and Inconsistents.

9. When the total group of seniors was considered, Consistents scored highest, with Regressents, Inconsistents, and Emergents following in that order.
10. Males in both classes scored highest as Consistents, then in descending order as Emergents, Regressents, and Inconsistents.
11. Females scored highest as Consistents, then in descending order as Emergents, Regressents, and Inconsistents.
12. Total figures for all schools, both classes, and both sexes indicated that highest mean *Sims* scores were achieved by Consistents, and then by Emergents, Regressents, and Inconsistents in that order.

In conclusion, the analysis of the data, besides leading to the rejection of the hypothesis, indicated that those who were persistently in the gifted category (Consistents) were found to have generally higher *Sims* scores than did students who were members of the other persistence categories.

Persistence as Gifted Related to Parental Education

The null hypothesis, "The degree of educational attainment of a child's parents bear no relation to his persistence in the gifted category," was considered, and the following findings arrived at:

1. In the comparison of the means for both parents for each school in the four persistence categories, school A had a higher figure for Consistents than for the other three categories. School B had no Consistents identified, and the highest mean figure was in the Regressents category. In school C, the mean for Emergents was higher than that for Consistents, although the difference was less than one year. In school D, no Emergents were identified, but Consistents were higher than either Inconsistents or Regressents.
2. In examining the totals for all four schools combined in each of the four persistence categories, the mean figure for Consistents was higher than that for Inconsistents, Regressents, or Emergents.
3. Mean figures were higher for females than for males in all categories except Inconsistents.
4. Chi-square was applied, with three classifications of educational attainment made: grades 0-12, 13-16, and 17+. Students in the four persistence categories whose parental educational attainment fell into one of these classifications were so tabulated. The chi-square test was applied to both fathers' and mothers' educational attainments. For fathers, the hypothesis was rejected at the .05 level; for mothers the hypothesis was retained.

5. Analysis of variance showed a significant difference in the educational attainment of the father between persistence categories, but not between sexes. Sex differences were not found to vary from category to category. The same results were revealed for mothers' educational attainment.
6. Correlation analysis involved a comparison of the I. Q. score of each subject at the last testing with the highest level of education attained by each subject's mother and father.

In summary, it was felt that the analysis of the data led to the rejection of the hypothesis, there being a demonstrated relationship between the degree of educational attainment of a child's parents and his persistence in the gifted category. It was shown that Consistents' parents had higher mean educational attainment than did the parents of the other three persistence categories.

Persistence as Gifted Related to Changes in Parental Marital Status

The null hypothesis, "The stability of a child's parents in regard to marital status bears no relation to his persistence in the gifted category," was considered and the following findings arrived at:

1. Only twenty-seven of the 199 students, 14 per cent, were from homes in which there had been marital status changes. Returns from the questionnaire revealed the following breakdown of the changes: death, thirteen; divorce, thirteen; separation, one.
2. Only two Consistents out of a total of twenty-nine, 7 per cent, came from homes with changes in marital status. Twelve Inconsistents, or 17 per cent of the seventy-one, were from homes with changes. The Regressents had a total of nine changes, or 11 per cent of the eighty-two children. Emergents had four students of the seventeen, 24 per cent, whose homes had been marked by marital status changes.
3. The chi-square test of the hypothesis led to its retention, indicating no real difference existing between persistence and marital status changes.

Persistence as Gifted Related to School Achievement

The null hypothesis, "A child's school achievement bears no relation to his persistence in the gifted category," was considered, and the following arrived at:

1. In the junior and senior classes, a clear-cut pattern showing Consistents scoring at the highest grade-point averages at each grade level for each school was not evident. In schools C and

D, Consistents did have the highest averages in both classes at all grade levels except for the senior class when they were seventh graders.

2. When figures for the four persistence categories were tabulated together for the four schools, Consistents had the highest point-averages at every grade-level for juniors, and in grades seven, eight, ten, and eleven for seniors.
3. Regressents scored lowest at each grade level for the senior class, excepting grade eleven, when figures for the four persistence categories were tabulated together for the four schools. In the junior class, no clear-cut pattern of the lowest persistence category was evident.
4. Females achieved higher grade-point averages than males in a majority of the comparisons between the four persistence categories in the four schools for both classes.
5. Comparisons of total four-year averages for juniors and total five-year averages for seniors between sexes, showed females had higher averages than males in a majority of the comparisons.
6. Comparisons of total four-year averages for juniors and total five-year averages for seniors, combining sexes in each persistence category, revealed that Consistents were highest, Inconsistents second, Emergents third, and Regressents fourth for the junior class. Nearly the same results were noted for the senior class except that Emergents were second, and Inconsistents third.
7. In both classes the gifted subjects of the study had an average above a 3.00 or "B" mark.
8. Chi-square was applied to the hypothesis, considering males and females separately. The averages of school marks were classified into categories: "3.00 and below," and "3.01 and above." Students in the four persistence categories were then placed in one or the other of these classifications, as their school achievement dictated. For males, chi-square led to a rejection of the hypothesis at the .05 level, indicating a relationship between the two variables. For females, the hypothesis was retained.
9. Chi-square results for the sexes were then pooled, with the result that the hypothesis was rejected at the .05 level.
10. Analysis of variance indicated that there was a significant difference at the .05 level in the school marks between sexes, as well as between categories of persistence. Sex differences were not found to vary from category to category.

11. Correlation analysis involved the I. Q. score of each subject at the last testing, and school marks. The categories of Inconsistents, Regressents, Total Males, Total Females, and Total Sample yielded significant correlation analyses. On the basis of the analyses, the hypothesis was rejected and the following conclusions reached:
    a. Consistents did not repeatedly secure the highest point-averages at successive grade levels within schools.
    b. Consistents did secure the highest point-averages when the total figures for this category were tabulated together for all schools in eight of the nine grade comparisons.
    c. When total four-year averages for juniors and total five-year averages for seniors were computed, consistents had higher averages than the other three persistence categories.

Persistence as Gifted Related to Health Problems

The null hypothesis, "The extent of a child's health problems bears no relation to his persistence in the gifted category," was considered, and the following arrived at:

1. On the basis of questionnaire returns, students who persisted as members of the gifted category (Consistents) had a higher percentage of health problems than did students in the other three persistence categories.
2. On the basis of questionnaire returns, Consistents missed more days of school because of health problems than did students in the other three persistence categories.
3. Chi-square was used to test the hypothesis. Two classifications were established: "Health Problems" and "no Health Problems." Students in the four persistence categories were then classified accordingly. Chi-square led to the retention of the hypothesis.

CONCLUSIONS

The Selection of Gifted Subjects

In the four schools selected for this study, 1,302 eleventh and twelfth-grade students were identified for investigation. Of these, 199 were finally selected for inclusion in the study. The findings of the study indicated that there was a signicant difference in the number selected from school to school. A significant difference was found in the number of students selected from the eleventh and twelfth grade classes from school to school. It was also shown that there was no significant sex difference relative to the number of gifted identified from school to school, and between classes from school to school. Some conclusions in regard to these points will be noted later in the discussion of correlates of persistence of giftedness. Certain conclusions seemed warranted at this point:

1. Different tests were used in the testing programs in each school. The literature has suggested that investigators may not consider the results of different tests for the same individual as equivalent. Primarily this is related to the peculiarly unique feature characterizing different tests and the fact that they are standardized differently. With the exceptions of only five testings out of a total of thirty-one, the tests used were *California Tests of Mental Maturity*. It was concluded that the difficulties arising from comparisons of different tests had been held to a minimum for this sample.
2. The tests were administered at different times. Because two classes were considered in each school, and because each class had experienced testing at different times, the results of the testings could not be considered strictly comparable, even though most tests were *California Tests of Mental Maturity*. Since some schools do consider the results of different testings as comparable, it was concluded that the test results for this sample would be used as a means of identifying patterns of consistency of tested giftedness, recognizing the limitations of the practice. In some schools, children from different classes, tested at different times, are selected for inclusion in gifted programs.
3. Not all testing records could be utilized. In the original survey of the testing records, all those who had scored at or above 120 I. Q. were identified. However at a later point, seven students in school B, and nineteen students in school C had to be eliminated, primarily because their testing records did not coincide with the testing records of the preponderance of students in these schools. The most important reason for this was that these students were transfers—coming in from other schools. This pointed to a factor that undoubtedly affected the differentiation in percentage of gifted students from school to school, namely: that mobility of student population is a uniquely different problem from school to school.
4. Besides these conclusions, it was felt that there would be a difference in the number of gifted identified from school to school when the study was undertaken. This has been supported by the study findings.

5. The fact that sex differences were not apparent from school to school and between classes from school to school is in line with what recent investigations of the gifted have shown.

Consistency of Group Intelligence Test Scores and Identification of the Gifted

A great amount of inconsistency in the test scores of the students in the sample was demonstrated. Only 15 per cent of the total of 100 students remained in the gifted category throughout all testing. Several conclusions relative to the test histories of the subjects seem warranted:

1. It was demonstrated that there was a significant difference in the number of gifted students identified as Consistents, Inconsistents, Regressents and Emergents, and it was shown that there was a relationship between the number in each persistence category from school to school, as well as in the number of juniors and seniors in the four categories. There was no difference in the number of males and females in each of the persistence categories. It was concluded that the persistence categories represented unique classifications and that as many males as females would be found in each category. Insofar as consistency of giftedness was concerned, there was little question but that students in the sample represented distinctly varying degrees of such consistency.
2. Analysis of variance indicated that there was a significant difference in I. Q. scores secured among the categories at the last testing. It was concluded that this was an indication of the uniqueness of the categories. The last testing was used since this was the most contemporaneous with the time of the investigation.

The Problem of Early Identification

If it could have been shown for this sample of gifted children that there was no difference in the number of gifted children who were identified at the first testing and the number identified at the last testing, some case could have been made for early identification of the gifted. Chi-square led to a rejection of the hypothesis, and it was concluded that although 67 per cent of the total sample of 199 children were identified at the initial testing, the number fluctuated from testing to testing subsequently, so that there was little basis for expecting trustworthy early identification of the gifted.

Other null hypotheses were tested and showed that the number of juniors and seniors and the number of males and females was unrelated to the schools from which they came.

These results have implications for school practice. They suggest that although a large percentage of the gifted may be identified at early testing, not all children who will later enter into the gifted category may be reliably identified early in their school careers.

One of the central issues, but one with which this study did not deal is, "How early is early identification?" The solution to this question probably depends on the particular school situation involved and upon the type of program for the gifted provided by the school. Probably the best identification program aims for as early an identification as possible, but with additional identification and selection continuing through all grades.

Correlates of Persistence of Giftedness

Persistence as Gifted Related to the Schools' Special Provision for the Gifted

The implications of the findings seemed to be that persistence of gifted children in the gifted category is related to much more than the provision of specially-structured programs for the gifted. It seemed that additional considerations would be the size of the school and, the curricular provisions made available for all students. The data seemed to suggest that even though larger schools may not have specially-tailored programs for the gifted, they might contribute to persistence because of depth and breadth of curricular offerings.

Persistence as Gifted Related to Socio-Economic Status of the School

The null hyptohesis, "The socio-economic level of the school bears no relation to the number of gifted students that will be identified," was rejected, and it was concluded that there was a relationship between these two variables. For the sample of this study, the relationship was inverse, with fewer gifted students coming from the higher-third school than from the middle-third and one of the lower-third schools. It was further concluded that there are probably other factors which affect the persistence of gifted students in certain schools.

Persistence as Gifted Related to Socio-Economic status of the Home

It was concluded that there was a relationship between the socio-economic level of a child's home and his persistence in the gifted category. It was demonstrated by analysis of variance that there was a significant difference in socio-economic status in persistence categories but not between sexes. It was concluded that Consistents, or those who persist in the gifted category, tend to come from more privileged homes than do those who do not persist.

The correlations between I. Q. scores at the last testing and *Sims* scores revealed non-significant r's for the persistence categories and for the total males and total females, but a significant r for the total sample. It was concluded that high socio-economic status did correlate with high I. Q. scores for the total number of students. The computed r's were in agreement with previous studies of socio-economic status and I. Q. score.

It was concluded, on the basis of the *Sims* scores, that the designation of schools into privilegedness categories was in keeping with the *Sims* scores achieved by pupils in these schools. Children in lower-third schools generally had lower scores than children in middle or upper-third schools, while children in the upper-third school had the highest scores.

Persistence as Gifted Related to Parental Education

It was concluded that the degree of educational attainment of a child's parents was related to his persistence in the gifted category, with Consistents' parents having higher educational attainments than parents of members of other categories.

Persistence as Gifted Related to Parental Marital Status Changes

It was concluded that there was no real difference existing between persistence categories and marital status changes of parents.

Persistence as Gifted Related to School Achievement

It was concluded that Consistents did not repeatedly secure the highest point-averages at successive grade-levels within schools. Consistents did secure the highest point-averages when the total figures for this category were tabulated together for all schools. Further, when total four-year averages for juniors and total five-year averages for seniors were computed, Consistents had higher averages than the other three persistence categories. Finally, it was concluded that there was a definite relationship between a child's school achievement and his persistence in the gifted category.

Persistence as Gifted Related to Health Problems

No relationship was demonstrated between the extent of the gifted children's health problems and their persistence in the gifted category.

RECOMMENDATIONS

This study has endeavored to (1) determine the consistency of the group intelligence test scores of a selected sample of gifted children, (2) examine the consistency of the group tests as a means of identifying children with intelligence quotients of 120 or higher, and (3) examine some of the variables which might conceivably bear a relationship to giftedness. Further studies should be made to supplement and extend this study.

Recommendations for Further Research

The following studies are recommended:

1. Studies of the effect of correlates of persistence of giftedness should be conducted intensively within school systems, with particular emphasis upon representative case studies from a longitudinal standpoint.
2. Studies of the effect of correlates of giftedness and its persistence should be conducted extensively in additional school systems, with emphasis upon determining reasons for some schools identifying more gifted children than others.

In reference to both of the preceding recommended studies, efforts should be made to learn of: (a) the effect of the cumulative home background upon tested intelligence, particularly as this might be related to shifts into and out of the gifted category, (b) the relationship of school achievement to tested intelligence, particularly to shifts in I. Q. score rank, (c) the relationship of health and personal problems to tested intelligence, particularly to shifts in I. Q. score rank, and (d) the relationship of the school's curricular provisions and general milieu of the school to tested intelligence. An example relative to the latter point would be the question. "Does the addition of a school counselor result in a larger number of gifted children being identified, or in greater stability of giftedness in children?" or, "Does the provision of in-service training programs for teachers result in a larger number of gifted children being identified, or in greater stability of giftedness in children?"

3. Further study should be made of the patterns of test histories, perhaps considering additional categories to those utilized in this study, such as "Early Regressents," "Late Regressents," "Early Emergents," and "Late Emergents."
4. Studies of students with early high group intelligence test scores should be conducted, with special consideration being given to the differences between such students and others.

Recommendations for School Practice

As a result of the findings and conclusions of the study, the following recommendations are made to school officials concerned with gifted children:

1. Testing programs should be organized systematically on a regular, sequential basis. If group intelligence tests are to be used

for the purpose of identification of gifted students, the tests used should provide results which are equivalent, if the same test series is not used. Otherwise, the same test series, changing by age levels, should be used.

2. Test records should be carefully maintained, with complete information gathered and kept. This will mean more than recording I. Q. scores. Name of test, form of test, date of administration, raw scores, chronological ages, and mental ages are basic data.
3. Testing programs should be periodically reviewed. This would involve evaluative studies of test results from time to time. It would involve, in the case of intelligence testing for the purpose of identification of the gifted, checking from time to time to see how closely test results agree with other indications of giftedness.
4. Cumulative records should be maintained systematically and accurately, including as much information as possible. Schools would better err by being more comprehensive than seems necessary than by recording too little.
5. Schools should supplement cumulative data on the backgrounds of youngsters with such things as measures of socio-economic status, creativity, and study skills.
6. Schools should guard against the use of any single measure of giftedness, particularly the use of a single test score.
7. Schools should make every effort to identify gifted children as early as possible. This will mean, besides attention to I. Q. scores, looking for other indications of giftedness: creativity, high ability to concentrate, extensive vocabulary, and high ability to do abstract thinking. Schools should keep alert to a constant review of the rolls of the gifted. Early identification should not be construed to mean that if a child is not identified early, he may never be identified as a gifted child. Since only a portion of the gifted are probably capable of early identification, provision should be made for adding children whose early I.Q. scores may have been low, but whose subsequent I.Q. scores are higher.
8. Schools would do well to make a longitudinal study of the number of gifted being identified from year to year. School officials presently are concerned with the percentage of students who go on to college, or who drop out of school before graduation. Perhaps concern should be evidenced for our mental drop-outs—the Regressants and the Inconsistents particularly—and the reasons for this condition.

A FOLLOW-UP STUDY OF 1952 AND 1962 HIGH-ABILITY, HIGH-ACHIEVING OHIO SECONDARY SCHOOL GRADUATES

WALTER B. BARBE and HERBERT B. NEFF
Kent State University

The development of the potentiality of the young people of a country is the greatest problem confronting its leaders. To the extent that efforts to promote fuller development of human resources are successful, the level of civilization may be judged a success. Where human resources are not developed, or where the development is limited along lines that are utilitarian-at-the-moment, that level of civilization will be judged a failure.

Education is the means by which modern society provides for the development of the talents of its people. In terms of the need for each individual to develop his potentiality, as well as the great need of the group to benefit from the results of each individual producing at his highest level of ability, the public schools have the greatest responsibility to provide the kinds of educational experiences which promote maximum growth.

The basic philosophy must be adopted that there is no single way in which all individuals can best be educated; and, indeed, the methods and materials themselves must constantly be changing. But mere change is no assurance of a better educational system, although there is some reason to believe that the type of school personnel which is secure enough to change is frequently the most effective anyway, and perhaps the least in need of change. Only by constantly examining the educational program being offered to children, and also the product of the school itself, can there be any assurance that the best possible educational program is being offered.

The study being reported upon is concerned with examining the product of public school education. High school graduates of a decade ago and graduates of only a year ago were studied, both in terms of what their achievements have been since graduating as well as their opinions about the education which they received.

The groups in this study are not typical high school graduates, but are a particularly select group. They not only have high ability, but also are high-achievers academically. The reason for studying this group, whose abilities, both potential and demonstrated, are far above that of the average high school graduate is one of utmost importance and reflects a change in attitude on the part of many educators. The goal of education, of course, is to develop each individual to the limit of his abilities, and perhaps from a better understanding of the development of the abilities of the students with greater capabilities will come a better understanding of the development of those students who do not have such a variety of resources. The study of any particular group implies that the findings do have application for others; for, indeed, the problems of educating the gifted are perhaps only one part of the same problem of providing the best possible education for all children.

A study of high school graduates has significance, for they are indeed the product of our educational system. Their views, and their achievements, reflect both the effectiveness and the failings of our system of education.

A study of high school graduates who were high achievers has particular significance, for they are the ones who, academically, represent the success of the educational program to which they were exposed. There can be little reason for high achievers to criticize unjustly their educational experiences, for they received the tangible rewards of high grades, high test scores, and even scholarships, upon all of which such a high premium is placed by our society.

That the students in this study are also of high innate ability is important. These are not the students who have over-achieved academically, at the expense of their physical or emotional development, but are the ones who have the ability to be high achievers and have, at least in their high school experience, used this ability to achieve in those areas in which the school places importance. It would be hoped, but could hardly be substantiated, that this innate ability would be reflected in responses with more insight into the problems and sensitivity to problems themselves.

Times do change situations, and nowhere is this better reflected than in the change in high schools since the advent of the Space Age. In order that any changes would be indicated which reflect different attitudes or values of society, certainly including the influence of the Russian scientific achievements but not these exclusively, the present study included graduates of high school classes from the current class as well as those of a decade ago.

Many of the limitations of a follow-up study of high-achieving, high-ability high school graduates are known, including the particular limitations of reliance upon a questionnaire for information, and it is recognized that there are undoubtedly other limitations with which the authors are unaware. The authors believe, however, that for the purpose of this study to be achieved, the means used were the best available. It is hoped that the reports of these students will aid in providing a still better education for other high-achieving, high-ability young people, as well as for all American youth.

REVIEW OF LITERATURE

Findings of research in education are rarely reported in the media which is directed toward the general public, and even more infrequently make any impact upon the attitudes of the general public. One major exception, however, has been the repeated reports that many, perhaps even one half, of our brightest young people do not attend college. Whether or not the figure is correct is of less importance than the general public awareness that the problem does exist, that giftedness does not necessarily "will out," and indeed that there are many very bright students not attending college.

As would be expected, a larger percentage of students with high academic ability enter college.[1] While it must certainly be recognized that the colleges are not today the exclusive domain of the high-ability student, it must also be recognized that when some high-ability students do not attend and students with less ability do, it is time to re-examine the very purpose of college itself. Various studies have been made concerning the college entrance of high ability students, and depending upon the selection of the subjects report a variety of percentages. In such select groups as Terman's, 90 per cent of the men and 86 per cent of the women entered college.[2] These were students of exceptionally high potential ability, with minimum I. Q. scores of somewhere between 130 and 140. Barbe's follow-up[3] of the high school graduates of a special program for gifted students, in which the minimum I. Q. was 125, reported 97 per cent of the men attending college, but only 67 per cent of the women. The possible influence on the men of a specialized education toward encouraging advanced education was noted, while the lower number of women attending college indicated the need for attention and program concern for this particular problem. A possible explanation for the greatly differing number of women entering college in Terman's study and Barbe's was the vastly different cultural background of the subjects in the two studies.

In a study of the upper 10 per cent of the 1955 graduating class in Indiana, Wright[4] reports that 85 per cent of the boys and 64 per cent of the girls entered college. Cole,[5] in a study of students randomly sampled from throughout the United States, representing 2.6 per cent of all high school seniors, reported that of those scoring in the top 30 per cent on an aptitude test, 76 per cent of the boys and 65 per cent of the girls intended to go to college.

Comparison of the figures between different studies can only be made in a general way, for the definitions used of "high ability," "gifted" and the "top group" differ greatly. Generally, the upper group includes about the top quartile. Another caution which must be noted when comparing figures between studies is that resulting from the greatly increased college attendance, even in the past decade, so that studies of the past several years are not exactly comparable to data obtained even as little as five years ago.

Significant in the literature is the obviously lower percentage of capable females who enter college. Terman's study[6] presented figures almost comparable between the sexes, 90 per cent of the men and 86 per cent of the women entered college, but other studies present quite a different picture. Ranging from Terman's low percentage difference of four per cent,[7] to 10 per cent in Dugan's study,[8] and 30 per cent in Barbe's study,[9] the importance of this problem differs with the group being studied. The cultural groups from which the subjects come is obviously an important factor.

Reasons vary as to why students, capable of benefiting from a college experience, do not attend. The reason usually listed by students in response to the question as to why they did not attend college is "financial reasons." It has been estimated that of the top 30 per cent of the United States college ability high school seniors "there are between 60,000 and 100,000 high school graduates of college ability who failed to enroll in college for financial reasons."[10] But another reason for [illegible] attendance, according to Cole's findings, is the "lack of a college goal." The lack of financial means is perhaps only an excuse, partly true but not the most important reason. Sumption and Luecking[12] recognize that the reason for failure to go to college is financial in some cases, but draw attention to "other significant factors" such as parents who do not value an education, preference for a car, and going to work.

A study by Wrenn[13] of the top 16 per cent of the 1938 Minnesota high school graduates nine years after graduation indicated that only 45 per cent had received baccalaureate degrees. The literature generally reports that about half of the top high school graduates do not finish college.[14]

There seems to be clear evidence that the high-ability, high-achievers, in high school finish college in greater numbers than do the high-ability high school students who were not high-achievers.[15] The need for more "attention to incentives and the stimulation of capable individuals to do graduate work is necessary . . ." according to Wrenn.[16]

In Dugan's study[17] it was reported by only about 50 per cent of the subjects that the high school counselor had been helpful. Reactions of high-ability students to high school[18] is reported as less than "enthusiastic".

It would appear from a brief review of the literature on follow-up studies of high-ability high school students that an ever increasingly large percentage, currently about 90 per cent,[19] are attending college. The problem persists concerning the discrepancy between the number of boys and girls who attend college.

The number of high-ability students finishing college is considerably less than the 90 per cent who enter, perhaps even as low as half of those who entered. Suggestions vary as to solutions to this loss of potential ability, but generally involve the need for more counseling and guidance of students.

PURPOSE

The purpose of this study was two-fold. The first purpose was to study the graduates of Ohio high schools who were high-ability, high-achievers, in terms of their family background, education after high school and evaluation of the educational program in which they were enrolled. The second purpose was to examine the differences between two such groups who had graduated from high school ten years apart.

Specific answers were sought to such questions as:

How many of this group attend college?

How many of them obtain graduate degrees?

How many fail to complete college?

Why did they drop out?

What vocations do these gifted students choose?

Do those who attended schools where there were special programs for the gifted fare better than those who were not in special programs?

Did those who were in schools with guidance counselors fare better than those who had no counselor?

What subjects did these superior students find most valuable? Least valuable?

From what socio-economic backgrounds do these high school graduates come?

PROCEDURE

Selection of Subjects

The subjects for this study were chosen first on the basis of high achievement as demonstrated by their performance on the Ohio Scholarship Tests administered in their high schools while they were seniors.

Approximately 300 winners in the high school classes of 1952 and 1962 were eligible graduates for the study. It was necessary to obtain the addresses of 1952 graduates from their high schools, but the addresses of the 1962 graduates were obtained from the Department of Education, Division of Guidance and Testing.

The Ohio Scholarship Test is administered only to the top 40 per cent of each high school class. The highest five per cent of this group are recognized as award winners. This would mean that an award winner would be in at least the upper two per cent of the high school seniors for that year on this particular test of academic achievement.

The high schools attended by those subjects included in the study were asked to provide intelligence test scores. Scores were received for 71 per cent of the subjects in the 1952 graduating class and for 87 per cent of the subjects in the 1962 graduating class. From 21 different tests which had been used to measure the ability of these students, it was apparent that this was a high ability group as well as high achieving. (The mean I. Q. for each of the sub-groups was over 130).

The Questionnaire

Every attempt was made in preparing the questionnaire so that it could be answered as objectively and as quickly as possible and yet provide complete information. Four open-end questions were used for subjective evaluation of high school and college and for suggestions for improvement of high school and college.

A four page questionnaire was prepared, typed and reproduced by multilith. The twenty-eight questions included the following areas:

1. General information such as school and school district, marital status and children.
2. College and vocational aspirations, and attainment.
3. Family background, siblings, vocations, income and education of parents.
4. College attendance, rank, majors, school, reasons, if any, for dropping out or not attending.
5. High School Counselors, special classes and subjects estimated most valuable and least valuable.
6. Open-end questions to evaluate present methods, and recommend ways of improving the education of superior students.

The State Scholarship Tests

The State Scholarship Tests are administered each year to the upper 40 per cent of the senior class of more than 80 per cent of the high schools in Ohio. The test is an achievement test prepared by the

Division of Guidance and Testing of the State Department of Education with the cooperation of the universities, colleges and schools of Ohio. Such testing has been administered for the past 34 years. The top five per cent of those taking the test are designated as award winners.

Limitations

Causes vary for the limitations of a study but invariably include such factors as lack of time and funds, inability to obtain certain information, and failure of some subjects to respond. Specific limitations of the study include (1) the State General Scholarship winners lists were used to obtain names and addresses of high-ability high school graduates, (2) the sample obtained obviously consists of very able achievers and test-takers, but does not include other high-ability students whose achievement may not have been measured by this particular test, (3) mental ability test scores were not obtainable for all of the subjects, (4) the I.Q. of this sample was measured by a wide variety of intelligence tests, the scores of which were not reducible to any standard equivalent, and (5) there was no opportunity to interview any of these subjects. Whatever information obtained is subject to all of the limitations peculiar to responses to questionnaires.

COMPOSITION OF GROUP

The subjects in the present study were high-achieving, high-ability graduates of Ohio high schools in 1952 and 1962. The final group, about whom this report is written, contained a total of 481 subjects, divided between the 1952 class (N=208) and the 1962 class (N=273). Because of the method by which the subjects were selected as high-achievers, more boys were eligible than girls. This resulted in the final group being heavily weighted in favor of the boys in the ratio of about 4 to 1. The group included from the class of 1952 contained 162 boys and 46 girls, while the 1962 group contained 220 boys and 53 girls.

Of the original number of eligible graduates, a return of the net sample, exclusive of losses, of 74.1 per cent was received from the 1952 graduates and a return of 91 per cent was received from the 1962 graduates. These data are presented in Table I.

All of the students in the study had been classified as "award winners" in the State Scholarship Tests administered in their senior year. On the basis of these results, they are classified as high-achievers. On the basis of group I.Q. results provided by the high schools on 71 per cent of the 1952 graduates and 87 per cent of the 1962 graduates, mean I.Q. scores of 132 and 133 respectively were obtained for the two classes. On the basis of these results, the groups are classified as high-ability.

The date on which the latest I.Q. test was administered for each of the subjects was obtained and yielded information somewhat different from that expected. The mean number of years between the student's last I.Q. test and his graduation from high school was about 3.8 years for both the 1952 and the 1962 graduates. This would indicate that any test yielding an I.Q. score was given for most of the subjects in the ninth grade or before. Of course, in some instances there were later tests measuring the student's ability level, but where this did not yield an I.Q. score, it was not included.

Two-thirds of the 1952 graduates and three-fourths of the 1962 graduates were from city high schools, while the 1962 high school population was almost evenly divided between city and county high schools. Five per cent of the high schools in Ohio, all of which were city schools, provided one-fourth of the subjects in this study.

TABLE I
QUESTIONNAIRE RETURNS FROM 1952 AND 1962 OHIO HIGH SCHOOL GRADUATES

	Number of Subjects	
	1952	1962
Total eligible graduates	343	305
Total receiving questionnaire	281	300
Losses:		
No current address	62	5
Number of replies	208	273
Per cent return:		
Of total group	60.6	89.5
Of net sample, exclusive of losses	74.1	91.0

FAMILY BACKGROUND

Data concerning the marital status of the subjects was collected only for the 1952 graduates. Because of the recency of the 1962 graduates, such information would have no value. Seventy-three per cent of the male and 80 per cent of the female graduates in 1952 are married and have (as an average) one child.

The educational level of the parents of the subjects showed significant changes favoring the 1962 graduates. More of the parents of the 1962 graduates attended college, were college graduates and had done graduate work. About 10 per cent of the parents of 1952 graduates had an 8th grade education, or less, while less than 5 per cent of the parents of the 1962 graduates were this limited in their educational training. The fathers in both classes were better educated than were the mothers in terms of advanced education, although there were more fathers than mothers in both classes with less than a twelfth grade education. The number of parents having master's and doctor's degrees has more than doubled since the 1952 graduates.

Data on the occupational level of the fathers of subjects indicates that the largest number of parents, of both boys and girls, in both the 1952 and the 1962 sample were in the professional and managerial classification. Nearly 50 per cent of the fathers were in occupations at this level. About 20 per cent were in the service occupational classification, and approximately 17 per cent of fathers of the 1952 graduates and 15 per cent of the fathers of the 1962 graduates were in the skilled, semi-skilled and unskilled classifications of occupations. The number of mothers who worked remained at about 15 per cent for the 1952 and the 1962 graduates.

Seventy-two per cent of the 1952 male graduates are in professional and managerial occupations with the remainder distributed between clerical occupations, services occupations, armed forces and school. About 30 per cent of the females are in professional and managerial occupations, and more than 50 per cent are housewives not working outside the home. The vocational aspirations of the 1952 graduates have proven, after a decade, to be reliable.

The subjects generally come from city school districts, have parents who are well educated and in the professional and managerial occupational classification. They come from small families, although the size of the families from which the 1962 graduates came appears to be larger.

COLLEGE ATTENDANCE

It would be expected that a study of high-ability, high-achievers would indicate a large percentage who would attend college. Just how high such figures should be, however, could not be predicted. The 1962 subjects in this study presented a remarkable figure with respect to college attendance. Ninety-nine per cent of the males and 100 per cent of the females had entered college less than one year later. (It may be even more remarkable when the percentage of returns is recalled as being 89.5 per cent of the original sample, before any adjustment is made because of lost addresses, etc.) Truly, there can be little question but that some factors are operating on this particular group which are highly conducive to college attendance. The attendance figures of the 1952 class is equally impressive, although it is recognized that the percentage of returns is less. About 98 per cent of the males and 91 per cent of the females, or a total of almost 97 per cent of the total group, entered college.

The number of subjects in the 1952 class attending college, and the years of attendance, are given in Table 2. Ninety-eight per cent of the group attended college, and to date, 88 per cent have completed four or more years of college. Sixty-eight per cent have completed five or more years of college.

Types of Colleges Attended

Table 3 contains categories of the types of colleges attended by the graduates. It is interesting to note that while the percentage of girls who attended Ohio state colleges remained the same (17 per cent), the number of males attending Ohio state colleges decreased from about 28 per cent in 1952 to 11 per cent in 1962. The number of graduates attending state colleges outside of Ohio decreased significantly for the males, but increased for the females. The percentage attending private Ohio colleges remained about the same for the two classes, with about half as many of the males, (20 per cent) attending as females, (40 per cent). There was no significant change in the number attending city colleges in Ohio. The most significant trend which was apparent from this tabulation was the great increase in the number attending private colleges outside of Ohio. The percentage of boys changed from 19 per cent to 47 per cent, while the girls increased from about 20 per cent to 28 per cent. It was readily noticeable that in all but a few cases the category, "Private college, not in Ohio," actually referred to Eastern prestige colleges.

TABLE 2

NUMBER OF YEARS OF EDUCATION BEYOND HIGH SCHOOL OF 1952 GRADUATES

Number of Years	None	One	Two	Three	Four	Five	Six	Seven
Males (N=162)	1	1	3	10	25	40	36	45
Females (N=46)	3	1	1	5	16	8	8	4
Total	4	2	4	15	41	48	44	49
Per Cent	1.9	0.9	1.9	7.3	19.8	23.2	21.3	23.7

TABLE 3

CLASSIFICATION OF UNDERGRADUATE COLLEGES ATTENDED BY 1952 AND 1962 HIGH SCHOOL GRADUATES

	Class	State College (Ohio)		State College (Not Ohio)		Private College (Ohio)		Private College (Not Ohio)		City College (Ohio)		U.S. Armed Forces Academies		No College or Specialized Training School		College Not Designated	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
1952	Male (N=162)	46	28.4	28	17.3	37	22.9	31	19.1	15	9.3	2	1.2	1	0.6	2	1.2
	Female (N=46)	8	17.4	1	2.2	21	45.7	9	19.6	3	6.5	....	......	4	8.6	....	......
1962	Male (N=220)	25	11.4	22	10.0	48	21.8	104	47.3	13	5.9	2	0.9	2	0.9	4	1.8
	Female (N=53)	9	17.0	4	7.5	22	41.5	15	28.3	3	5.7	....	....	....	......	....	......

Many of the subjects went to out-of-state colleges for graduate work. Three students did graduate work at a foreign university. Thirty-one of the subjects attended an "Ivy League" college for graduate work.

Financing of Colleges

Almost 72 per cent of the 1952 and 73 per cent of the 1962 graduates were offered some type of scholarship to attend college. Twelve per cent of the 1952 graduates declined the offer of a scholarship, while 9.5 per cent of the 1962 graduates declined.

How did most of the students finance their education? With more than half of the subjects being offered and accepting scholarships, this was obviously one source, but when asked the major way in which they financed their education, scholarships received little attention. Perhaps the students took the scholarship for granted and answered with respect to how they obtained the remainder of the money, or perhaps the scholarships were actually only a small portion of their total expenses. Many of the students listed more than one course; these were then tabulated. Self-employment and savings were the two major sources of finances for both men and women in the 1952 and the 1962 classes. The percentage listing "savings" increased in the male group from about 41 per cent in 1952 to about 58 per cent in 1962, while the percentage listing self-employment decreased from about 41 per cent in 1952 to 18 per cent in 1962.

College Majors

Over 40 per cent of the males in both the 1952 and 1962 classes majored in the physical sciences, with a slight downward trend noted in the number of 1962 male graduates in the physical sciences. There has been a noticeable increase in the percentage of females majoring in the physical sciences (2 per cent to 13 per cent) between 1952 and 1962. There has been a noticeable increase in the number of males and females majoring in mathematics. Virtually none of the boys in either the 1952 or 1962 classes listed education as their major, although it is not unlikely that some of them are taking education but listed as their major the subject which they are planning to teach. Seventeen per cent of the females in the 1952 class majored in education. Of the 1962 group, which is just into its freshman year in college, only one girl listed education as her major. It would appear that subjects such as those in the present study do not early choose education as their major. (About 25 per cent of the 1962 graduates reported that they had not selected a major.)

College Drop-out

Because of the relative recency of the 1962 graduates, no information was obtained from them concerning drop-outs. Even in the 1952 class, there were so few drop-outs that the data have little meaning. Five of the males said they were unable to finance a college education, and an additional four more stated that they dropped out to take a job. Two others stated lack of interest in college, two entered the military service, two others merely said they intended to return to college later. Two of the men bluntly stated that they could not make high enough grades. The reasons given are much the same as those found in other studies, even if the small number of drop-outs in this study give the only limited meaning.

Rank in College Class

The students were asked to rank in thirds, their position in their college class. About 77 per cent of the males and 91 per cent of the females in the 1952 class ranked themselves in the upper one-third of their college class. About the same percentage of males ranked themselves in the upper one-third in the 1962 class, but the number of females ranking themselves this high dropped to 77 per cent. The fact that the 1962 class is only in its freshman year might account for this great discrepancy between the two groups. Seven of the men in the 1952 class and six in the 1962 class ranked themselves in the lower one-third of their college class. None of the girls ranked themselves in this group.

Parents' Attitude Toward College

The parents' attitude toward their child going to college undoubtedly is an important factor in determining college attendance. In the 1952 class, there were fewer parents "strongly in favor" of college attendance by their children than in the 1962 class, with a much greater increase in interest in college attendance on the part of parents of girls. In the 1952 class, 89.5 per cent of the parents of boys and 78.3 per cent of the parents of girls were "strongly in favor" of their children attending college. By 1962, the figures had become 95.8 per cent and 94.3 per cent, respectively, for the parents of boys and girls. Noteworthy is the number of cases into which the parents were divided, 15 in the 1952 group and 8 in the 1962 group. In 20 of these cases, the mother was strongly in favor while the fathers were only moderately in favor, while in two other cases the reverse was true. In one case (in the 1952 group) the mother was not at all in favor and the father was only moderately in favor. This boy, with an I.Q. of 142, already has earned his doctorate.

High School Attendance

Only 17 per cent of the class of 1952 attended any form of special class or classes, while 71.4 per cent of the class of 1962 attended some form of special class. This great change clearly reflects one of the greatest changes in the philosophy of education ever to occur in such a short space of time.

Most and Least Valuable Courses

The high school courses found to be the most valuable by the 1952 and 1962 graduates are listed below in the order which they were mentioned:

1952 Males	1952 Females	1962 Males	1962 Females
1. English	1. English	1. Mathematics	1. English
2. Mathematics	2. Science	2. Science	2. Mathematics
3. Science	3. Mathematics	3. English	3. Science

The high favor given to English is clearly evident, with mathematics obviously gaining favor of the boys and the girls. Listing the courses found to be the least valuable would be misleading as the listings were so scattered. The only agreement concerned social studies, which more than two-thirds of both the males and the females in both classes agreed was the least valuable.

High School Counselor

The percentage of graduates reporting that in 1952 they had a high school counselor was about 30 per cent of the boys and almost 40 per cent of the girls. In 1962, however, a decided change was noted. Almost 87 per cent of the boys and 96 per cent of the girls reported that their school had a counselor.

EVALUATION OF HIGH SCHOOL EXPERIENCE

The curriculum of the high school reflects to a large extent the attitudes and concerns of the general public. As more and more of the population completes high school, there are more and more people who judge themselves qualified to evaluate their educational experience, not just for themselves but for all others.

The subjects in the present study were no exceptions. Being high-achievers, and possessing high ability, it is true that they are in a unique position, for they are the ones for whom the educational system as it exists has been the most successful. With this fact being remembered, the subjects in the present study were asked to evaluate their high school and college experience and to make recommendations. The group could never be characterized by reticence, nor lack of verbosity.

Because of the great length of most of the responses, and even contradictions within some, it was decided to tabulate only the first reaction of the subjects to the question, "How would you evaluate your high school experience?" In the 1952 sample, 41 per cent of the males and 47 per cent of the females rated their high school experience from satisfactory to very satisfactory, without immediately giving specifics while in 1962 about 43 per cent of both the males and females gave this rating. Thirty-nine per cent of the men and 35 per cent of the women in the 1952 sample and 26 per cent of the men and 35 per cent of the women in the 1962 sample criticized either specific courses, or courses in general, with such statements as "too easy," "boring," "not challenging," and "waste of time." A wide variety of other responses, such as "high school too small," and "too much social life," made up the remaining responses.

English was the most frequently criticized course, even though it was one of the courses listed as most valuable. Although teachers and counselors were not criticized, neither were they singled out as a group for particular commendation. There were exceptions, of course, in which specific teachers were named as being outstanding.

One would expect that the superior student who was near the top of his class, won scholarships to the best colleges, and entered his chosen profession would be laudatory, or at least not critical, of his high school education. However, such is not the case; in spite of the favorable first comments, the evaluations almost without exception had a "Yes, but" quality.

As might be expected, the students from the smaller schools were more critical and those from larger schools were more satisfied. Degree of intelligence did not appear to be a factor in judgment.

RECOMMENDATIONS FOR IMPROVING HIGH SCHOOLS

When asked for recommendations for improving their high school experiences, it was again necessary to tabulate only the first response of the subjects. The category containing the largest percentage contained items which recommended special education for high-ability students. Forty-six per cent of the males and 43 per cent of the females in the 1952 class recommended such things as: enrichment classes, honors programs, grouping and acceleration. Even though there was obviously a great increase between 1952 and 1962 of such programs, the 1962 males and females made the same recommendation, 43 per cent and 53 per cent respectively.

Recommendations concerning specific courses were made by 8 per cent of the 1952 graduates and 12 per cent of the 1962 graduates. Better teachers were recommended by 12 per cent of the 1962 group, but only 4.5 per cent of the 1962 group.

Here again, first impressions tell only part of the story. Although about half of these students indicated in their first statement that they would recommend some kind of special program for superior students, most of the others believed that a more stringent or enriched curriculum would be beneficial. Such statements as "more independent study and projects," more emphasis on "basics," and less "busy work" were common. Students from smaller high schools made pleas for more choice of courses, bigger libraries, and better science laboratories. A sizeable number wanted more attention to "how to study" and "how to think critically."

EVALUATION OF COLLEGE EXPERIENCE

Evaluation of college by the 1952 graduates was almost enthusiastic, as compared with their evaluation of high school. More than three-fourths of the 1952 class rated their college experience as highly satisfactory. Such comments were made as: "excellent preparation for life and vocation," "life shaking experience," "revolutionary," and "*The* experience." The 1962 graduates, who have only just entered college, responded most frequently with a statement that it was "too early to evaluate, but . . . ." Better than one-third of this group evaluated their initial experiences in college as very satisfactory. It is noteworthy that the length of responses to the evaluation of college was extremely short, as opposed to the almost voluminous responses when evaluating high schools.

RECOMMENDATIONS FOR IMPROVING COLLEGE

Recommendations for improvement of college were far fewer and less extensive than for high school, with the primary emphasis being on advanced placement by means of examination. A second area of concern was for more independent study and projects. The girls especially wanted more seminars and discussion groups. A poignant observation made by a few of the subjects regarding their college teachers was that they wanted better teachers, fewer "researchers."

SUMMARY

The purpose of this study was to follow-up high-achieving, high-ability secondary school graduates to determine the number who attended college, the reasons for those not attending, the college record of those who did attend and to obtain an evaluation and recommendations from them concerning their high school and college education. Ohio high school graduates of 1952 and 1962 who had been listed as winners in the State Scholarship Tests were included in the study and their group I.Q. scores were obtained from their high schools. Questionnaires were then mailed to these subjects.

Of 343 eligible graduates in the 1952 class and 305 in the 1962 class, the number of replies received from each group, respectively, was 208 and 273. Exclusive of the losses, this represents a per cent return of the net sample of 74 per cent and 91 per cent, respectively, for the 1952 and the 1962 classes. The subjects were mostly from city school districts, with a tendency for the number from city districts to increase between 1952 and 1962.

About three-fourths of the 1952 graduates are married and have one child. The educational level of the parents of the subjects was higher for the 1962 group than for the 1952 group, although there are still a number of the parents with less than an 8th grade education (about five per cent). The number with advanced education is very high. About half of the fathers of the subjects are in a professional and managerial occupation, although a large number (about 15 per cent) are in the skilled, semi-skilled and unskilled categories.

The subjects in the present study attended college almost unanimously. There were few drop-outs and the majority were in the upper-third of their class. English was the course stated as the most valuable, with social studies stated as least valuable.

IMPLICATIONS

1. The Ohio General Scholarship Tests are extraordinary predictors of college attendance and success. This may be due not only to the potential and ability of the student selected by such a test, but to motivational factors which result from exposure to a variety of experiences and individuals. Certainly, great influence is cast by the example of highly motivated teachers working in an upwardly mobile community composed of parents who are supportive in intellectual areas.
2. Because our criteria for the subjects was so highly selective, such factors as having high school counselors, having been in special classes, and having above average socio-economic backgrounds had no influence upon the extent of their college attendance. Virtually all of the subjects attended college, and even the drop-out number was small, that none of the negative factors sometimes associated with non-college attendance applied to this selective a group.
3. The clear recognition that English is one of the most valuable courses in high school, although it received the most suggestions for improvement, indicates the need for constant evaluation of methods and materials for use with high-ability, high-achieving students. The suggestion of the students that grouping would be one answer must be considered seriously.
4. The negative attitude expressed toward social studies, which usually has as its goal the development of good attitudes toward social

responsibility, would indicate that social studies as it is being taught in high school is not satisfactory for high-ability, high-achieving students.

5. City schools are providing increasingly more of the winners on the State Scholarship Tests and the type of college selected by the student is appreciably more selective. Either the city schools are attracting an increasingly more selective student body, at the expense of the county schools, or are more adequately preparing their students for the test, or both.
6. There were apparent large school advantages such as: better physical facilities, special classes, greater variety of courses, more specialization of course work if wanted, higher education of teachers and possibly better teachers, and more assurance in competitive situations.
7. The state colleges of Ohio are not enrolling nearly their proportional share of the high-ability, high-achieving students. While there certainly should be no attempt to encourage students to attend a school which would not provide them with the best possible education, there must be some concern when so few of these students are attending state schools in Ohio. The implication must be either that the students do not know what the state schools have to offer them specifically, or that the state schools are not making any effort to provide for this particular type of student.
8. The obvious scarcity of girls in the winner's lists of the State Scholarship Tests poses a problem. Perhaps the measuring instrument is inadequate as a measure of total achievement, heavily favoring the boys in the specific areas of mathematics and sciences. If this is the case, more attention needs to be given to the construction of the test with emphasis on total achievement, or increased opportunity for total achievement and incentive should be provided for girls to take the kinds of courses necessary for what the test makers emphasize.
9. The results of the study show conclusively that in a decade the financial support of such students has changed from self-employment to reliance on savings. Causes for this are unknown though one may hypothesize that higher academic standards and decreasing availability of suitable employment may be two of the factors.

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AN ANALYSIS OF CREATIVE THINKING TASKS AS MEASURES OF ACADEMIC POTENTIAL WITH SPECIAL REFERENCE TO THE WORK OF GETZELS AND JACKSON

THOMAS M. STEPHENS
Ohio Department of Education

Educators will agree that one of the primary objectives of public schools is to provide educational programs which encourage the development of all academic abilities. The number of potentially gifted students overlooked is probably equal to the number who are not given the opportunities consistent with their academic abilities.

Tests of intelligence have long been the chief instruments used to estimate academic potential. While these measures are not infallible, there is considerable evidence to demonstrate that these tests are our best predictors of academic achievement. Longitudinal studies by Terman[1] and his associates have demonstrated that students who score at the higher I. Q. levels continue to be superior in adult life.

The problem of excluding students who should be in special programs confronts the educator who seeks to identify students of high ability. Those responsible for educational research can be of service by directing their attention to certain problem areas. *At what point can one be reasonably certain that the majority of students with the potential to achieve at superior levels will be identified? How high is too high on the I. Q. continuum?*

Terman's studies focused on students who obtained scores at or above 135 I. Q. In more recent years, a lowering of I. Q. limits in the identification of the academically gifted has been evident. A recent study in Ohio revealed that the minimum score used by some schools for identification of the gifted fell below 114 I. Q. The most frequently used cut-off point ranged from 125 to 129 I. Q.[2] It is apparent that school personnel are unable to agree at what point a special program becomes necessary. Their definitions of giftedness may be relative to the abilities of the local schools rather than to national norms.

Authorities in the area of the gifted have long recognized the attributes of thinking which are presently not measurable. In recent years, attention has been directed towards these aspects of intelligence. As a result, attempts are being made to measure creative thinking abilities. Preliminary findings have been reported by Getzels and Jackson.[3] Their conclusions are important to the school personnel concerned with the identification and selection of academically gifted students.

This report is concerned with certain aspects of Getzels and Jackson's research relative to the measurement of creative thinking. This critique will focus on three aspects of their study.

AN OVERVIEW OF GETZELS AND JACKSON'S RESEARCH

The purpose of Getzels and Jackson's study was to discover significant variables which differentiated the creative from the intelligent person. They examined the achievement motives, fantasy productions, school performance, and teacher preferences of two groups of adolescents: those high in creativity but not in I. Q. and those high in I. Q. but not in creativity.

Subjects, Instruments, and Procedures

The experimental groups were obtained from a private school in the Chicago area. The subjects were selected on the basis of their performances on standardized tests of intelligence and five tests of creativity.

Scores on standardized tests of intelligence were converted by use of a regression equation to Stanford-Binet I. Q.'s. In addition to the Stanford-Binet, scores from the *Wechsler Intelligence Scale for Children* and from the *Henmon-Nelson Test of Intelligence* were available for some of the subjects.

The tests of creativity were adapted from Guilford and Cattel. Getzels and Jackson described the five tests as follows:[4]

1. *Word Association.* The subject was asked to give as many definitions as possible to fairly common stimulus words; e.g., 'bolt', 'bark', 'sack'. His score depended upon the absolute number of different categories into which these definitions could be put.
2. *Uses For Things.* The subject was required to give as many uses as he could for objects that customarily have a stereotyped function attached to them; e.g., 'brick', 'paperclip'. His score depended upon both the number and originality of the uses he mentioned.
3. *Hidden Shapes.* The subject was required to find a given geometric form that was hidden in more complex geometric forms or patterns.
4. *Fables.* The subject was presented with four fables in which the last lines were missing. He was required to compose three

different endings for each fable: a 'moralistic', a 'humorous', and a 'sad' ending. His score depended upon the number of appropriateness, and originality of the endings.

5. *Make-Up Problems.* The subject was presented with four complex paragraphs, each of which contained a number of numerical statements; e.g., the costs involved in building a house. He was asked to make all the mathematical problems he could that might be solved with the information given. His score depended upon the number, appropriateness, and originality of the problems.

Two experimental groups were formed as a result of the I. Q. and creativity scores. One group consisted of 15 boys and 11 girls. They scored in the top 20 per cent in creativity with a mean I. Q. of 127. This group was labeled the *"high creativity group."*

The second group was composed of 17 boys and 11 girls. They scored in the top 20 per cent in I. Q. but not in the top 20 per cent in creativity. Their mean I. Q. was 150. They were called the *"high intelligence group."*

The chronological age range for both groups was from 12 to 18 years.

Forty-three students scored in the top 20 per cent on both measures. For this reason, they were not included in the study.[5]

The two groups were compared on the following variables:

1. *Scholastic Achievement as Measured by Standardized Achievement Tests.*

   The achievement test scores were obtained from the students' records. A variety of tests was used at different grade levels. The tests included verbal and numerical achievement measures. An average score was computed for all the standardized achievement test data at each grade level.

2. *Teacher Preferences.*

   Each student was given three ratings by his teachers. These included his general desirability as a student; his ability to become involved in learning activities; and his leadership qualities.

3. *McClelland's N-Achievement.*

   Six pictures from this test were shown for 20 seconds each. Following the showing, the students were asked to write short stories, allowing four minutes for each.

RESULTS

Getzels and Jackson summarized their results as follows:

1. Despite the striking differences in mean I. Q. the creative and the intelligent groups were *equally* superior to the total population in school performance as measured by standardized achievement tests.
2. Although it might be expected that creativity would contribute to status in a school setting, especially since the achievement of the highly creative subjects was at least as good as that of the highly *intelligent* group, it was actually the highly *intelligent* group rather than the *creative* group that was preferred by teachers when compared with the average student.
3. The two groups did *not* differ from the population in N-Achievement as scored conventionally.
4. Although failing to show differences when scored for N-Achievement, the fantasy productions of the creative group were clearly dissimilar from those of the population as a whole, so much so that the 'blind' sorting of 47 creative and noncreative protocols, resulted in only 7 misplacements.
5. A more systematic differentiation of the protocols using content-analysis procedures showed that the two experimental groups differed significantly in their fantasy responses. The creative group made greater use of stimulus-free themes, unexpected endings, humor, incongruities, and playfulness.

ANALYSIS OF THE RESULTS

Three aspects of Getzels and Jackson's study were considered. Within this framework, considerations were given to:

1. The validity of the instruments which were used in their study.
2. The ability to predict academic success through the use of tests of creativity.
3. The quality of instruction provided to the students who were studied.

Validity

The manner in which the terms "high I. Q." and "high creatives" were used in reporting the results imply that these are mutually exclusive. Getzels and Jackson repeatedly pointed out that both groups contained students of relatively high I. Q. Interpretors, including the researchers, have failed to remember this.

The following was reported in one publication:

> *Getzels told more than 1,000 principal participants that a child may not be at the top of the I. Q. ladder, but may have exceptional creative talent. A study conducted by the University of Chicago staff of 6th and 12th grade students at a private school showed that tests which measure I. Q. only are not geared to identify those students who have high creativity.*[6]

The findings hardly warrant the generalization reported above. The study considered *only* students of high I. Q. One treads on tenuous ground when attempting to argue that 127 I. Q. is not high.

Torrance[7] proposed, as a result of a replication of Getzels and Jackson's study, that approximately 120 I. Q. is the critical point. He suggested that beyond this point creative thinking abilities contribute more to academic achievement than do abilities measured by the traditional tests of intelligence.

Another point to be considered is the concept of divergent thinking which Getzels and Jackson used in developing their tasks. They presented these as measures of divergency.[8] The problem of standardization is critical since this concept requires openess or lack of closure. *Can a standardized test measure divergent thinking? Or, does standardization imply closure? Does scoring limit the amount of divergency?*

Answers to these questions are dependent upon one's point of view. These are questions, however, that the user should recognize prior to placing undue reliance upon the results of "creative thinking" tests.

Validity, by its nature, must be based on assumptions. It is the logic of the assumptions that must be scrutinized. Tests of intelligence were developed in the same way. School personnel have operated on the assumption that intelligence is what tests of intelligence measure. Getzels and Jackson have challenged this notion. In doing this, they are now in effect saying — intelligence is what tests of creative thinking measure.

Prediction of Academic Success

Getzels and Jackson's findings suggest that I. Q. scores do not adequately discriminate the students of high academic potential from others. This is concluded because of the large difference in mean I. Q. scores and that both groups achieved equally well on achievement measures.

The mean I. Q. score for the total school population (N=449) was reported to be 132. The mean was obtained by the use of a regression formula to the group I. Q. scores. It seems important to note that actual I. Q. scores *were not* used in this study.

The entire student population would be considered gifted by many public school administrators. The lack of a heterogeneous population does not, however, nullify the findings. Students who consistently score higher on the *same* measures of intelligence would be expected to score higher on standardized tests of achievement.

Getzels and Jackson's statistical procedure is based on several assumptions. One of these is that if the students were actually administered the Stanford-Binet they would earn I. Q. scores comparable to the regression I. Q. scores. The researchers did not indicate which revision of the Binet they used to develop their formulas. Both the 1937 and 1960 revisions were examined by this writer. A judgment can be made to determine if it is possible for the students actually to score at the equivalent I. Q. levels.

The 1937 revision of the Stanford-Binet does not provide norms for chronological ages beyond sixteen years and no months. The norms for the sixteen year old subjects require a correct response on every item in order to earn an I. Q. of 152. In other words, if the 1937 edition of the Stanford-Binet were used, none of the subjects beyond sixteen years of age could actually earn scores comparable to the equivalent I. Q. scores derived by Gretzels and Jackson.

The 1960 edition of the Stanford-Binet requires subjects, who are fifteen years and no months old, to answer correctly every item in order to reach 153 I. Q. Subjects beyond fifteen years and six months cannot earn scores at or beyond 150 I. Q. As the subjects increase in age, the I. Q. limits diminish. Both revisions of the Stanford-Binet begin presenting ceiling problems with highly intelligent twelve year olds[9].

It is apparent that the method used by the researchers cannot accurately predict the actual Stanford-Binet I. Q. scores for many of their subjects. Yet, their major finding is based on an I. Q. difference between the two groups, one that in reality does not and cannot exist.

Even if these differences could exist, the standard error of estimate for the deviation I. Q. scores was ignored. Getzels and Jackson did not report that the 23 I. Q. difference between the means of the two groups includes plus or minus ten I. Q. points. This is based on their correlation coefficient of .814 from which the regression formula was developed.

When the standard error of 10 I. Q. points is considered, the mean I. Q. range for the *"high intelligence"* group becomes 140 to 160. The mean I. Q. range of the *"high creativity"* group becomes 117 to 137. It is possible that the actual I. Q. difference between the two groups is only three points. Of course, it may also be forty-three I. Q. points. The researchers neglected to report that the twenty-three I. Q. point difference did not include the standard error of measurements. It is possible that any difference which does exist is not to the extent assumed by the researchers.

Forty-three students were excluded from the study because they were in the top 20 per cent on both measures. In other words, more students were high on both measures than are contained in either of the two experimental groups. It appears that measures of creative thinking and tests of intelligence overlap. They probably measure many of the same cognitive abilities. The researchers were interested in the exceptions, but little emphasis was given to this fact.

Quality of Instruction

Getzels and Jackson did not consider the instructional program of their population. Yet, one of their major findings is explicitly related to the quality of instruction. They found that the *"high creatives"* achieved as well on standardized measures as did the "high I. Q." group. It is possible that the "high I. Q." sample was not achieving higher than their lower I. Q. peers because the instructional program placed a ceiling on their learning. Their data strongly supported this possibility, although they chose to interpret the low correlations between I. Q. and achievement differently. The finding that the lower achievement among the "high I. Q." group is a result of cognitive factors not measured by tests of intelligence cannot be supported without an evaluation of the instructional program for these students.

CONCLUSIONS

Getzels and Jackson have pioneered in a complex area. They have attacked a problem which has long puzzled authorities in the field of academic prediction. In a sense, they have directed their efforts towards a heretofore unknown attribute. They sought the extra quotient. These abilities have been described by various labels in the past. Have they created something of immediate value to school personnel? Or, have they used new devices to measure abilities presently assessed by current instruments?

Getzels and Jackson's objection to I. Q. as a predictor of academic potential can be challenged because:

1. The statistical procedure used to obtain deviation I. Q. scores is questionable. The assumption that their sample of twelve to eighteen year old students could obtain equivalent Binet I. Q. scores is false. The Binet norms are not suitable for many high I. Q. students in this age range.

2. Getzels and Jackson failed to consider the standard error of measurement when reporting the twenty-three I. Q. point difference between the means of the two groups. This procedure is misleading and tends to dramatize a difference which most likely is not nearly so great, if indeed, it exists at all.
3. The labels used to describe the two groups are misleading. Indeed, both groups contain "high I. Q." students.
4. Creative thinking tests were not used with entire student populations and, therefore, their predictive value can be of little use to school personnel for they do not discriminate the students of less ability from those with more potential.

Getzels and Jackson did not consider the instructional program from which their sample was obtained. Failure to provide suitable provisions for the high I. Q. students may be the reason for the comparable achievement of the two groups.

The validity of Getzels and Jackson's creative thinking tests can be questioned. Theoretically, the concept of divergent thinking excludes standard procedures. Which abilities are actually measured by such tests? While there is little agreement as to what tests of intelligence measure, research has demonstrated their predictive value. Time may prove the worth of tests of creative thinking as well.

Possibly, McClelland's[10] suggestion that more consideration should be given to the development of situations which are conducive to the emergence of talent is a more realistic problem for school personnel. This seems to be the real challenge. Can teaching styles be incorporated into the school which will result in more creative thinking?

The major contribution of Getzels and Jackson's work is the raising of questions concerning creativity. They have *not* proved that creativity is unrelated to intelligence; that creativity can indeed be measured; or even that among gifted children, measures of creativity are better predictors of academic achievement than are tests of intelligence.

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A SURVEY OF OHIO COLLEGE OPINIONS WITH REFERENCES TO HIGH SCHOOL MATHEMATICS PROGRAMS

Robert S. Brown and Cecil W. Gabler
Marion Public Schools

From the time of the appearance of the Report of the Commission on Mathematics in 1959, the mathematics teachers in Marion, Ohio have been concerned about the content of our program for college-bound high school students. Most of these teachers have taken advantage of summer institutes, conferences and independent study to keep abreast with the rapidly changing scene in mathematics. Four years ago a study was organized as an additional aid to teachers in this endeavor. The monthly programs of this group consist of presentations by local teachers of various phases of the newer content in mathematics.

As a result of this interest on the part of the teachers, administrative and curricular changes have also evolved. The major change is the arrangement in each of our junior high schools whereby a strong teacher is given a highly-selective mathematics group during their eighth year of school with the knowledge that she will have the same group during the following year when they study algebra. This arrangement permits excursions into various fields of mathematics that normally would not be attempted. It also permits the teacher to rearrange the sequence of what she teaches and to lead into algebra much earlier than she would under the traditional arrangement.

When these students reach senior high school, they take a unified plane and solid geometry course, a full year of advanced algebra and a semester of trigonometry. Next year, 1963-64, our first group to go through this sequence will be in their senior year. They will study trigonometry during the first semester.

One of the reasons for making this survey of the opinions of college mathematics department heads was to determine what course should be stressed during the second semester, the one in which these students normally would have taken solid geometry.

In addition to this there were two other questions for which we wanted answers directly from the teachers who would receive our high school product. The first of these was, "Should we do anything with the calculus?"; the second, "Which of the newer content do college teachers think should be included in our college preparatory mathematics curriculum?"

The question relative to the inclusion of the calculus in the high school curriculum is one for which we felt we needed an answer that was both authoritative and recent. It is true that we could always turn to the statements of the Commission about this or quote the opinion of a well-known and respected college mathematics teacher; but this apparently was not enough. Parents still were asking why their son or daughter did not have calculus in high school. They still felt that graduates from our high school were placed in unfair competition in college classes with those who had had this subject at the secondary level.

It was for answers to questions such as these that we decided to go directly to the heads of mathematics departments in the colleges and universities of Ohio. Forty-nine questionnaires were sent; thirty-two were returned — a response of 65.3%.

Colleges responding were as follows: Central State, Wilmington, Rio Grande, Heidelberg, Notre Dame College, Antioch, Bluffton, Ohio Northern, Kent State, Dayton University, Muskingum, Mt. St. Joseph, Western Reserve, Ashland, Miami University, Fenn, University of Toledo, Ohio State, Wooster, Ohio Wesleyan, Ohio University, Mount Union, Capital, University of Cincinnati, Hiram, University of Akron, Baldwin Wallace, Wittenberg, Bowling Green, Oberlin, Defiance, John Carroll.

TABLE I MAJOR EMPHASIS FOR LAST SEMESTER, SENIOR YEAR

Analytic Geometry	17
Probability and statistics	5
Function concept, the structure of mathematics and analytic geometry	3
Analytic trigonometry and college algebra	2
Algebra of sets or analytic geometry	1
Properties of functions and elements of statistics	1
Algebra of sets, probability and statistics	1
S.M.S.G. twelfth grade program	1
Calculus	1

Table I is a tabulation to the question, "For a group of senior mathematics students who already have had full year courses in algebra I and II, unified plane and solid geometry, and a semester of trigonometry, what do you consider should be our major course emphasis for the remaining semester?"

There seems to be fairly uniform agreement that the emphasis for this last half year should be analytic geometry. Seventeen named it explicitly; four more included it in combination with other fields: Probability and statistics ranks next with six respondents naming this field.

TABLE II SHOULD CALCULUS BE INCLUDED IN OUR HIGH SCHOOL C. P. PROGRAM?

	Number	Percent
"no"	22	69%
"yes"	8	25%
"maybe"	2	6%

Responses recorded in Table II are from answers to the question, "Do you feel that calculus should be a part of the high school program for the group described above? If yes, under what conditions should it be offered? If no, will you please explain why it should not be offered?

Sixty-nine per cent said "no", 25% said "yes", and 6% wrote in "maybe." Most of those saying "yes" or "maybe" wrote strong qualifying statements to support their answer. Most of these were similar to the one that stated, "Only if it is taught as a full year, college-level course, by a college-calibre teacher, to a very select group for advanced placement purposes."

Of those saying "no," the following responses were typical:

1. "Few high school students are mature enough to appreciate the concept of the infitesimal."
2. "Too many other important areas would have to be sacrificed."
3. "We feel that high schools should emphasize thorough preparation for calculus, but leave calculus itself for college."
4. "The smattering (of calculus) which they receive without a good foundation in analytic geometry is only a delusion."
5. "Most high school students can learn the mechanics but are not mature enough to understand the concepts."

TABLE III SCHOULD A SHORT INTRODUCTION TO CALCULUS BE GIVEN?

	Number	Percent
"no"	22	69%
"yes"	8	25%
"maybe"	2	6%

Table III is a tabulation of the responses received to the question, "If we do not offer the calculus in high school, do you think it advisable to include a short introduction to calculus during the senior year? Will you please explain the reason for your answer?"

Although the percentage for Table II and Table III are the same, they do not necessarily represent the same people.

Those answering "yes," for the most part, indicated that it could do no harm.

The sixty-nine per cent answering "no," however, had a great deal more to say and were much more vehement in the way they expressed this. The following examples are from department heads of colleges which large numbers of our graduates attend:

1. "My experience has been that freshman who have had a brief introduction to calculus often have a false sense of security that produces more troubles than might have developed if they had started from scratch."
2. "An introduction to calculus or less than an entire year serves only to dull the student's appetite for mathematical analysis."
3. "My experience has been that such courses tend to skim off the interesting cream and leave the student thinking he knows more than he really does; so he underestimates his fellow classmates' ability and tends to be bored with a course that contains partly material he has had and partly material that is new."
4. "Creates only false security in student and often gives him misinformation."
5. "Better no calculus than just a little."
6. "Such students do not appreciate rigor and careful proof."
7. "There are more important topics to be covered."
8. "I have had a number of students who have been introduced to calculus; they all have a mistaken notion as to their ability to understand basic concepts and techniques."

The data in Table IV will be important to us locally in knowing what college teachers believe to be the relative importance of some of the newer elements in mathematics programs. The fact that 91% of those responding to our survey believe that a college preparatory mathematics student should know how to work with inequalities gives us definite direction that here is an area that needs to be worked into our sequence at various levels. We now introduce this in the eighth grade and carry it sequentially through the next four years. Maybe this

TABLE IV WHAT TOPICS SHOULD BE INCLUDED IN THE PREPARATION OF OUR COLELGE-BOUND MATHEMATICS STUDENTS?

	Rank	Number	Percent
Inequalities	1	29	91%
Number Systems	2	25	79%
Analytic Geometry	3	24	75%
Algebra of sets	3	24	75%
Elementary Functions	4	21	66%
Probability	5	20	63%
Matrix Algebra and Determinants	6	18	56%
Statistics	7	16	50%
Limits concepts	8	7	22%
Vector analysis	9	6	19%
Integral calculus	10	1	3%
Differential calculus	10	1	3%

concept needs to be introduced much earlier; it will be something to think about.

From the response it would seem that number systems, analytic geometry, sets, elementary functions, and probability also are held in high esteem as elements to be included in college preparation. Only about half of those responding favor the inclusion of matrix algebra and determinants and statistics; fewer still would include statistics, limits concepts, vector analysis, integral calculus and differential calculus.

A STUDY OF THE EFFECTIVENESS OF THE ENGLISH 2600 COURSE AT EASTMOOR HIGH SCHOOL

WILLIAM BYRNE, CATHERINE BARTLETT, AND T. H. MAYER
Columbus City Schools

This report presents the results of a study conducted during the school year of 1961-1962 at Eastmoor High School for the purpose of evaluating the effectiveness of ENGLISH 2600, a book designed to teach English grammar and usage utilizing programmed learning techniques. Three primary questions were under consideration: (1) Do students using ENGLISH 2600 make greater appreciable gains in English grammar and usage over a one year period of study than those students enrolled in the regular English curriculum? (2) Do high or low ability students enrolled in ENGLISH 2600 make greater appreciable gains, respectively, in English proficiency than high and low ability students in the regular English curriculum? (3) What are the reactions of teachers and students to this type of programmed instruction?

Procedures

The population employed in examining the questions under consideration consisted of seven ninth grade classes at Eastmoor High School. The classes were divided into two groups. The first was made up of 82 students enrolled in three ENGLISH 2600 classes and will be referred to as the experimental group. The second, the control group, consisted of four regular English classes, numbering 109 students. The two groups were matched with one another at the beginning of the study with respect to English proficiency and general ability. Neither group represented a completely typical cross-section of the Eastmoor student body since a section of honor students (able learners) and a section of slow learners were not included in the experiment. There was a considerable range of individual differences present.

In the experimental sections, only a limited amount of group instruction or individual help in grammar was given — at least no more than would have been possible with one teacher handling a large group of 100 or more. The teaching of the literature part of the course was carried on as usual and was interspersed with the ENGLISH 2600 instruction. Some of the pupil activity with the programmed book was carried on outside of class, replacing "homework." The amount of time spent in both the experimental and control groups on grammar and usage was approximately equal.

The criteria used for measuring English proficiency was the *California Language Achievement Test.* High and low ability students were defined, respectively, as those students in the upper third and lower third of the I. Q. ranges for the experimental and control groups.

The results of the statistical computations indicated that no "real" differences existed between the control, experimental, high ability, and low ability groups at the time of matching. The results of the computations used in matching are presented in Tables I-IV.

At the end of the one year period of study an alternate form of the *California Language Achievement Test* was administered to the experimental and control groups. The mean grade placement scores for the total experimental and control, and the high and low ability groups were computed. The means were then compared with the mean scores from the first testing, and the significance of differences tested between the experimental and control groups for high and low ability, and totals.

To determine student reaction a critique was held with the pupils in the experimental groups. The teacher was also asked to record her reactions to her experience with ENGLISH 2600.

Findings

The results of the statistical computations are presented in Tables V and VI.

There was a tendency for the control group to make larger gains over the one year period than the experimental ENGLISH 2600 group. This tendency held true for the high and low ability groups as well as the totals. However, none of the differences proved to be significant at the .05 level of confidence.

Relative to opinion, 45 of the 82 students, or 55%, stated they preferred ENGLISH 2600. The remaining 45% expressed a choice for the more usual type of instruction. The most common complaint relative to ENGLISH 2600 was that it was "too boring." Many also found it "too easy," with no "real challenges" along the way. As might be expected, the students of higher ability became bored more quickly.

On the other hand, a number of pupils stated that the programmed instruction helped them to gain a better understanding of grammar skills than with the more usual methods. These were mostly pupils in the middle ability range.

Among the comments of the teacher were that the linear method of programmed learning does not enable the pupils to get an overview of the subject and that the book can not be used to quickly review selectively. The teacher, after the initial excitement of the experiments had worn off, found this method of teaching "boring." In general, the course seemed to be less suited to the pupils on either end of the range of ability, so far as acceptance of the course was concerned.

On the more positive side, the teacher found pupils could proceed at their own rate and all became active learners with programmed instruction. No time had to be spent "un-learning" mistakes. Moreover, the instructor appreciated the fact that there were no homework papers to check.

Conclusions

The following conclusions have been drawn in regard to the questions under consideration.

1. The gains in English proficiency during the ninth grade over the one year period of study for the students using ENGLISH 2600 and those students enrolled in the regular English curriculum were statistically the same, as measured by the *Calfornia Language Achievement Test.*
2. The high ability and low ability students enrolled in ENGLISH 2600 courses made no greater gains, respectively, in English proficiency than the high and low ability students in the regular English curriculum.
3. All differences between groups and sub-groups could have occurred by chance factors alone.
4. Pupil opinion concerning the ENGLISH 2600 was rather evenly divided with a small majority (55%) stating a preference for it. While the teacher stated opinion for and against the course, it was her wish that she be permitted to discontinue the use of this type of instruction during the next year.

Recommendations

Assuming that other experiments establish the findings of this study, it would appear that the economies of teacher time could be made through special instructional arrangements using large groups without a reduction in educational gains. In fact, the additional expense involved in using ENGLISH 2600 can scarcely be justified if this new teaching device is not employed in some way other than the usual arrangement for grammar instruction.

With fewer grammar papers to grade, it might be that more composition work could be assigned and checked for a given class, with some resultant educational gains, even in a normal sized class. Again more class time could be available for literature and composition if almost all of the work on ENGLISH 2600 were to be done in study hall or at home.

It is therefore recommended that ENGLISH 2600 be used only if special instructional and administrative arrangements are used to make use of the unique qualities of programmed instruction.

TABLE I
RESULTS OF MATCHING I. Q.'s FOR EXPERIMENTAL AND CONTROL GROUPS

Groups	Mean I. Q.	S. D.
Experimental		
High ability	115.000	3.966
Low ability	92.620	7.161
Total	103.945	11.046
Control		
High ability	119.087	6.399
Low ability	94.542	5.276
Total	107.056	11.286

TABLE II
SIGNIFICANCE OF MEAN I. Q. DIFFERENCES BETWEEN EXPERIMENTAL AND CONTROL GROUPS

Group	Difference	"t" Ratio
High ability	4.087	1.534[a]
Low ability	1.922	1.010[a]
Total	3.111	1.598[b]

[a] A "t" ratio of 2.021 or larger indicates significance at the .05 level of confidence.
[b] A "t" ratio of 1.979 or larger indicates significance at the .05 level of confidence.

TABLE III
RESULTS OF MATCHING GRADE PLACEMENT SCORES ON THE *CALIFORNIA LANGUAGE ACHIEVEMENT TEST* FOR EXPERIMENTAL AND CONTROL GROUPS

Groups	Mean G. P.	S. D.
Experimental		
High ability	9.320	.874
Low ability	8.240	.826
Total	8.963	1.064
Control		
High ability	9.939	1.277
Low ability	8.075	.968
Total	9.158	1.406

TABLE IV

SIGNIFICANCE OF MEAN GRADE PLACEMENT SCORE DIFFERENCES BETWEEN EXPERIMENTAL AND CONTROL GROUPS

Group	Difference	"t" Ratio
High ability	.619	.447[a]
Low ability	.175	.157[a]
Total	.195	.907[a]

[a] A "t" ratio of 2.021 or larger indicates significance at the .05 level of confidence.
[b] A "t" ratio of 1.979 or larger indicates significance at the .05 level of confidence.

TABLE V

RESULTS OF RETESTING ON THE *CALIFORNIA LANGUAGE ACHIEVEMENT TEST* OF CONTROL AND EXPERIMENTAL GROUPS

Groups	Mean G. P.	S. D.	Increase over first testing
Experimental			
High ability	9.573	1.085	.253
Low ability	9.000	.859	.760
Total	9.837	1.150	.874
Control			
High ability	10.839	1.029	.900
Low ability	8.775	1.166	.700
Total	10.042	1.387	.884

TABLE VI

SIGNIFICANCE OF RETEST MEAN GRADE PLACEMENT SCORE DIFFERENCES BETWEEN EXPERIMENTAL AND CONTROL GROUPS

Group	Difference	"t" Ratio
High ability	1.266	1.178[a]
Low ability	.225	.214[a]
Total	.221	.928[b]

[a] A "t" ratio of 2.021 or larger indicates significance at the .05 level of confidence.
[b] A "t" ratio of 1.979 or larger indicates significance at the .05 level of confidence.

AN EVALUATION OF A PROJECT FOR GIFTED CHILDREN IN A COUNTY SCHOOL SYSTEM

WALTER B. BARBE
Kent State University
and
NORMAN S. CHAMBERS
Oberlin City Schools

Evaluation of programs for gifted children have met with varying degrees of success. Attempts to have controlled experiments have yielded little information, for more often than not results have reflected only the effectiveness of individual teachers in the program. Evaluations on the basis of achievement have been difficult, primarily because most gifted children are already achieving at the top level of the tests so that experiences in a special class have little effect upon their scores on later tests.

Attitudes toward the effectiveness of a program of special classes for gifted children are, of course, only one means of evaluating such programs. Any stated reaction is, of necessity, influenced by such factors as (1) direct involvement or non-involvement in the program, (2) familiarity with the program, (3) the existence or absence of any basis for comparison, and (4) preconceived opinions about special classes for gifted children. Examining the reaction of a variety of people will, perhaps, provide one type of evaluation of a program of special classes for gifted children. It is not unlikely that such results substantiate the addage that "the viewpoint is determined by the point of view."

PROCEDURES

The present paper is a report of the evaluation of the program of special classes in the Portage County schools established as a part of the special demonstration-research project sponsored by the Division of Special Education of the State Department of Education for the 1960-62 school years.

Special classes for gifted elementary school children were started in five of the ten districts in Portage County. The classes contained children from ages nine through twelve. Three of the classes combined two grades, one of the classes combined three grades and one class included only one grade level.

The evaluation, including reports on a variety of topics relating to the special classes in the program, was reported on by: (1) elementary school children who had received I. Q. scores of over 120 on group measures of intelligence (N=161), (2) teachers of gifted elementary school classes, grades three through six (N=6), (3) teachers of "regular" classes, in which the gifted children would have been enrolled had they not been in the special class (N=27), (4) school administrators responsible for the school in which the gifted class was being operated (N=6), and (5) parents of children in the special classes for the gifted (N=274).

Information was desired concerning reactions to the program and to other factors dealing with the education of the gifted. Additional information was sought in the areas of attitudes, adjustments and difficulties of the school work.

Information was obtained by means of questionnaires. Respondents were asked to rate each of the questions or statements on a five point scale ranging from "highly favorable", or "highly agree" (a rating of five), to "highly unfavorable" or "highly disagree" (a rating of one). Means were obtained of the ratings given by administrators, teachers of classes of the gifted, teachers of regular classes in which the gifted children would have been had the program not been in existence, gifted boys, gifted girls, fathers of a gifted child in the program and mothers of a gifted child in the program.

RESULTS

Mean rating from these groups on seven factors dealing with either an evaluation of the program or concerns about the gifted are reported in Table 1.

Reactions to the program of special classes for gifted children were most favorable by administrators and by parents, both mothers and fathers, of children in the program. The children in the program also reacted to it favorably. The differences in ratings of gifted boys and girls are insignificant, as are the differences in the ratings of mothers and fathers, and the differences in ratings of teachers of the gifted class and teachers in the regular program.

There was an almost overwhelming reported desire on the part of each group of respondents to have the program continued permanently. These ratings were slightly, although insignificantly, higher than the rating on "reaction to the program."

When asked what they thought parents of the gifted children thought about the program, both gifted boys and gifted girls and school administrators were surprisingly accurate. Both teachers of the gifted

TABLE 1

RATINGS OF A PROGRAM OF SPECIAL CLASSES FOR ELEMENTARY GIFTED CHILDREN

(Mean Score on a 5 Point Scale from 5 "Highly Favorable or Agree" to 1 "Highly Unfavorable or Disagree")

	Gifted Children		Parents of Gifted		Teachers		Administrators
	Boys (N=72)	Girls (N=89)	Mothers (N=164)	Fathers (N=110)	Gifted (N=6)	Regular (N=27)	(N=6)
What is Your Reaction to the Program?	4.1	4.4	4.3	4.2	3.8	3.5	4.3
Would You Like to Have the Program Continued Permanently?	3.9	4.0	4.4	4.4	4.2	3.8	4.2
What Do Parents of Children in the Program Think of It?	4.1	4.2	4.3	4.2	3.4	3.6	4.2
Enrichment in the Regular Classroom Would Be a Better Provision	—	—	2.3	2.4	2.2	2.7	2.8
The Program Was Undemocratic in Relation to the Rest of the School Body	—	—	2.1	1.9	1.3	2.4	1.8
Children in Program Were at a Greater Advantage than Other Children	—	—	3.5	3.1	3.2	3.2	2.7
The Label "gifted" Best Describes Such Children	—	—	1.9	2.3	1.0	2.0	1.5

and teachers of the regular classes thought that parents would rank the program farther down the scale than they actually did, with teachers of the gifted being more doubtful than even the regular teachers.

The means of the ratings of all of the groups indicated that they disagreed with the statement that "enrichment in the regular classroom would be a better provision for gifted children." All of the groups felt that the program was not undemocratic, with the teachers of the gifted being most positive. There was generally the in-between type of response from all groups with respect to a question concerning whether or not children in the program were at a greater advantage than other children of the same grade level.

A question concerning the use of the word "gifted" clearly indicated that all groups either felt it should not be used, or were strongly inclined in that direction. The teachers of the gifted were the strongest in their opinion against the use of the word "gifted."

Administrators, teachers of the gifted and the teachers of regular classes seemed to agree generally that there was no observable change in attitude on the part of the teacher and the children in the program toward those not in the program. In one instance, there was some indication that there was a highly unfavorable change, but in another situation the exact reverse was noted. Parents who had children in the program were asked what they felt was the attitude of those parents who did not have children in the program. More than two-thirds of the parents felt that there was no change in attitude; the other one-third was distributed rather evenly between the favorable and unfavorable direction.

All of the groups participating in the study were asked about the attitudes of those children not in the program. About three-fourths of the school administrators, teachers of the gifted and parents indicated that they thought there had been no change. The remainder of their responses were somewhat evenly distributed slightly above and below the point indicating "no change." Regular teachers, however, definitely slanted their responses between "no change" and in the direction of an "unfavorable" change in attitude on the part of those children not in the program.

Another question, asking for the attitude of those teachers not in the program toward the program itself, yielded much the same information. On this particular question, the school administrators seem to be highly unrealistic in that more than a third of them believe that there was a favorable change in the attitude toward the gifted of those teachers not in the program, but the teachers of regular classes did not substantiate this belief of the administrators.

Attempts to determine if being a member of the gifted class affected their relationship with their former friends did not yield any conclusive evidence. Again, teachers of regular classes felt that there was either "no change" or were slightly negative, while teachers of the gifted felt any change to be favorable, as did parents of children in the program. The most enthusiastic group in this instance was the parents, with more than ninety-five per cent of the parents rating either "no change" or "favorable change." For some unexplained reason, the boys in the gifted class seem to feel that being a member of the class had more favorably affected their friendships than did the girls. Girls were inclined to rate "no change," while about one-third of the boys felt that there had been a change in the "favorable" direction.

School administrators, teachers of the gifted and parents felt that the program had, in one-third or more of the cases, favorably changed the adjustment to school of the children in the program. Virtually all of their other responses of these groups indicated that they thought there had been "no change." Even teachers of the regular classroom indicated in surprising numbers the belief that being in the class had favorably changed the gifted child's adjustment to school.

It seemed to be very clear that being in a class of gifted children increased the difficulty of the work. This was not a specific goal of the program; and, indeed, there was even careful attention to avoid an increase in quantity because the children were in the class; nevertheless, in almost seventy per cent of the cases, the parents felt that their child's homework had increased since they had been in the class. This could have been partly due to the fact that the child was in a higher grade than he had been in the year previously. The children, also, rated the difficulty of the work harder than the previous year.

SUMMARY AND EVALUATION

The Portage County Project for gifted children was established by the Division of Special Education of the State Department of Education as a demonstration-research project to determine what could be done for gifted children in the county school system.

The variety of different types of programs which were established for gifted children clearly indicated that there was no justification in gifted children being neglected, merely because they did not live in a metropolitan area. As one part of the Project, six different special classes were established in five school districts. The present paper is a report on an attempt to evaluate this program on the basis of attitudes of school administrators in which the program was operating, teachers of the gifted classes, teachers of regular classes teaching grades in which these gifted children were drawn from, the gifted children themselves and their parents.

The results clearly indicate a highly favorable reaction for this type of provision in this particular county school system as one means of providing for gifted elementary school children. As might have been expected, the group least favorable were the teachers in the regular classes, but considering the short-term nature of the project, much of this attitude, which was not actually negative but might truly be labeled "in-between," can be expected to change as more information is provided about the program itself.